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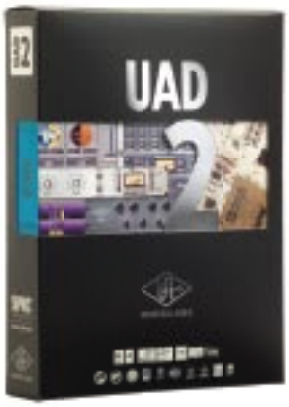

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leader

Scalability in business is an obvious thing, but does produce some odd consequences. In essence, if a manufacturer can make four times as many widgets with only twice the number of staff, it has scaled well. It could then encourage more growth by cutting the cost of each widget still be making more money than before. And so it goes on.

This is the reason why automation and efficiencies in manufacturing have had such a massive influence over the years – and why history teachers get so wibbly over industrial revolutions. It's scalability that has made it possible for Apple and Microsoft, for instance, to pour squillions of man-hours into development, yet still sell their fantastically sophisticated products for less than a decent mic pre.

Some of the consumer resentment over the cost of something like a CD may well have had something to do with a blinkered view of scalability. When record companies were selling buckets of them and could have brought the price down, they didn't. iTunes, however, did... in a 'we hope people don't know their 99p times-table' kind of way. Piracy is not good – I think I've covered that a few times before – but in the context of perceived corporate greed, the rise of the internet as a distribution channel, and the strange notion that if it's not attached to hardware it's not as valuable; you can almost see seller arrogance as an incitement to copy. But that's a whole other discussion.

In studio land, unfortunately, opportunity for significant scalability is the one thing we lack. You can bring in high-tech workflows and efficiencies, but like the old automatic car joke, you still have to be there. It basically comes down to time, and its infuriatingly linear nature, which puts studio rates into a very direct and proportional relationship with the studio's health. Sandwiched between the artist and the distributor, studios generally gain nothing from scale, because of the absence of a stake in the means and rewards of distribution.

However, amongst the towering virtual megaliths that are currently monopolising the virtual world in a way that doesn't sit incredibly well with their democratising and socially-networked wallpaper, there is opportunity. Think scalability, think 'virtually free' distribution, and realise that even very thick, de-coupled, concrete walls cannot prevent a studio seeking mechanisms to 'scale-up' – mechanisms that that don't have to be confined to real-estate, and don't have to be based on an hourly rate.

Paul Mac, Editor

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AUDIOMEDIA

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*Within Broadcast & Production

"At Envy our engineers and audio team have worked very closely with Scrub from design to support on every aspect of our audio technology, from Icon consoles to Dolby encoding, networked sound effects management to microphone stands. We see Scrub as part of the team."

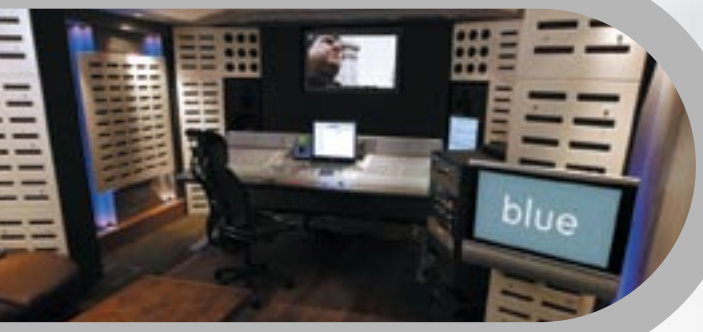
Dave Cadle, Envy

"Scrub understand the business we are in and the importance of top-quality sound to our facility and our clients. We have the people, and we happily rely on Scrub to provide the technology."

Simon Kanjee, Evolutions

"Throughout The Farm's history, the Scrub team has worked hand-in-hand with our renowned audio department. From state of the art Pro Tools systems to the latest Dolby encoding/decoding hardware, we've always trusted Scrub to understand all aspects of our technology needs."

David Klafkowski, The Farm



"Our clients demand the highest standards. In turn, we demand the same of our suppliers. Scrub have always delivered the audio expertise, a range of great technology and any support we need, consistently living up to their helpful, knowledgeable and supportive reputation"

Jim Jacobs, Prime Focus London / blue

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NEW BUNDLE

Neve Summing Package

Neve has announced the release of its Summing Package that pairs the 8816 hand-wired 16-channel summing mixer (including custom Carnhill transformers on the stereo mix bus) with the 8804 Fader Pack for long-throw fader control. The partnership is designed to give computer-based studios access to classic Neve analogue mix bus topology. Also included is Neve's Total Recall software, table top legs for the 8804, and the 8816ADC digital output card.

www.ams-neve.com

NEW PRODUCT

A New eXperience

ESI Audio has recently released the SW10K eXperience subwoofer that combines perfectly with the company's range of studio monitors. The ten-inch powered unit has an adjustable subwoofer crossover frequency of 50Hz-250Hz with a separate satellite output crossover frequency of the same range, plus an amplifier power of 100W at 100Hz. The unit is suitable for augmenting 2.1 sound systems to 5.1/7.1 surround sound productions.

www.esi-audio.com

NEW PRODUCT

Waves H-Comp and H-Delay

Waves Audio has released H-Comp and H-Delay from its new Hybrid Line of plug-ins. The Hybrid tag underlines the series philosophy of fusing the colour and character of classic analogue hardware processors with the features and flexibility of digital plug-ins. The H-Comp Hybrid Compressor combines the modelled behaviour of transformers, tubes, and transistors with the speed and precision provided by digital technology. Features include wet/dry mix option for easy parallel compression, analogue modelled release behaviour, transient pass-through control, BPM sync release function, multiple analogue character modes, output limiter/clipper modes, and external sidechain support. The H-Delay Hybrid Delay also cements vintage sound with modern technology and offers slap-back echo, ping-pong delay, tempo-sync with modulation, filtering, flanging, and phasing amongst others. Other notable features include delay time of up to 3500 ms (TDM), variable pitch delay time behaviour, multiple analogue character modes, infinite feedback support, LFO-controlled pitch modulation, LoFi mode, and tap plus BPM synchronisation.

Waves Audio
+1 865 909 9200
www.waves.com

NEW INITIATIVE

Miloco Market Place

Miloco has kick-started a new venture called the Market Place. Smaller studios, programming suites, and writing rooms occupied on a long-term basis by various producers, engineers, and artists can now be hired for an affordable price when not being used by their owners. Available spaces include stand-alone rooms and small studios with booths and live areas, all equipped with the gear their respective owners have kitted them out with. Most rooms come with Logic or Pro Tools LE systems, and a basic HD rig can be hired on top should it be required. Four spaces are currently available. Joel's Place in Hornsey boasts Neve, Pro Tools LE, and Logic equipment, plus an air-conditioned control room and overdub booth. Z-Noise and Suite 4, also in Hornsey, feature air-conditioning and good recording areas, while The Sandpit, SE1, offers a day-lit control room and booth.

Miloco Recording Studios
+44 (0) 207 232 0008
www.miloco.co.uk

NEW UPDATE

Pyramix Version 6.1

Merging Technologies has released version 6.1 of its Pyramix DAW that features improvements such as real time audio playback, MT ASIO Bridge, zero-latency direct monitoring, and a peak logger. Many of the improvements are direct results of user feedback.

www.merging.com

NEW UPDATE

Version 1.5 – MR-2000S

Korg has released O.S Version 1.5 for the MR-2000S Studio Recorder that enables synching of multiple recorders to facilitate multi-track DSD recording. By designating one MR-2000S as the master, the transport controls, recording mode, and setting of marker points will be shared with the additional units.

www.korg.co.uk

Focusrite Liquid Mix

Producer Allen Morgan has recently remixed Brick House by The Commodores and used his Focusrite Liquid Mix to capture the 'old-school vibe' of the song using vintage compressor and EQ emulation plug-ins. Contemporary elements were introduced using the Liquid Mix's modern emulations.

www.focusrite.com

NEW EQUIPMENT

Air Studios and KMR Audio

KMR Audio Ltd has supplied Air Studios' new mastering facility with a host of audio equipment including four Crane Song HEDD 192 A/D converters, a Crane Song Avocet Surround monitor controller, a Neve 8051 surround compressor, API 5500 Stereo EQ, and the Manley Backbone mastering insert switcher.

www.kmraudio.com

NEW PRODUCT

Genelec 1038CF Tri-Amplified Active Monitoring System

Genelec has introduced its new 1038CF Tri-Amplified Active Monitoring System for medium-sized control rooms, film, and video post production, broadcast monitoring, and project studios. The new unit is based on the 1038B model, and addresses the need from market feedback and customer requests for a compact package that still retains the same strong mid and high performance. The system is therefore suited to small, multi-channel environments where a subwoofer combined with bass management can handle most of the LF content plus the LFE channel signal. The 1038CF features a bass response down to 55Hz, and its compact sealed enclosure (H=24.02-inches X W=18.5-inches X D=9.25-inches) enables easy placement for on-wall, free-standing, or flush-mounted applications. The system has a built-in tri-amplifier unit, delivering a total of 420W into two eight-inch long-throw bass drivers, a 5.12-inch proprietary midrange driver, and a one-inch metal dome tweeter. The 1038CF uses Genelec's advanced Directivity Controlled Waveguide (DCW), which provides strong stereo imaging and frequency balance, essential for optimal functioning in acoustically challenging spaces.

Genelec
+44 (0) 208 962 5080
www.genelec.com

NEW USER

Omega Recording Studios and Anima

Omega Recording Studios, the largest recording studio complex in the Washington, D.C. metropolitan area, has invested in Prodigy Engineering's eight-channel remote controllable pre-amplification system – Anima. Omega Studios has been graced by industry luminaries such as Chuck Berry, Jimi Hendrix, and Prince, and understandably already boasts an impressive collection of vintage amplifiers and signal processors. Their newest acquirement, Anima, has contributed its own character to the studio's equipment line, and owner Edward Petersen is delighted with the result. He says, "Our mainstay is recording live musicians – orchestras, big bands, jazz greats. We need preamps that are clean and can capture the rich sound of great musicians playing fine musical instruments and using great microphones. The Anima gives us a true rich sound, along with cutting edge technology." The Anima preamplifier is an original OpAmp design with precision wound input and output transformers plus relay stepped gain in 1dB increments. Furthermore, it features the ability to save settings internally, along with easy integration options for Digidesign Pro Tools HD and compatible control surfaces like the ICON.

Prodigy Engineering
+1 301 262 3296
www.prodigy-eng.com

PRODUCT UPDATE

energyXT 2.5 Boxed Version

XT Software's energyXT 2.5 boxed version is available in stores worldwide. The DAW runs from a thumb drive and can be transported from computer to computer between Windows (including Vista), Mac OSX, and Linux operating systems.

www.auralex.com

NEW PRODUCT

Royer Labs SF-24V

Royer Labs has announced that its SF-24V Vacuum Tube Stereo Ribbon Microphone is now shipping. Designed for stereo and distance miking applications, the model features a dual vacuum tube design and claims to be the world's first commercially produced vacuum tube stereo ribbon microphone.

www.energy-xt.com

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www.focusrite.com/ISAOne

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Focusrite
www.focusrite.com

Manchester based Futureworks has helped create *The Hunt for Gollum*, an independent not-for-profit short film made by a cast and crew of over 100 enthusiastic film-makers and fans of the film. The unofficial prequel to the *Lord of the Rings* trilogy received mysterious sounds and epic music scores from the five-strong Futureworks sound crew who spent three months developing audio elements for the film.

www.thehuntforgollum.com

G&E's Flavorlab has installed Genelec's 8240A Active Monitors and 7270A Active DSP Subwoofer in its new flagship mix room. The facility has created award-winning music, mixing, and sound design for clients such as Discovery, MTV, ABC, Saatchi & Saatchi, and Pepsi. Five 8240A Active Monitors constitute the LCR array and surrounds, while the 7270A Active DSP Subwoofer provides the low frequencies of the 5.1 system.

www.genelec.com

Bing Bong – New Speakerphone 2 – New Speakerphone 2

Audioease's Speakerphone has had a very positive impact on the post-production market and its new incarnation, Speakerphone 2, is set to build upon that success. The plug-in sports a cleaner look and boasts new features as well as newly sampled guitar amp cabinets, antique phones, toys, answering machines and megaphones. New for 2 is a microphone simulation module that hosts a plethora of models ranging from Royers to toy mics, plus Coverup, a module that emulates the effect of closed spaces on sounds. Options include the inside of tin cans, cardboard boxes, under blankets, and the closed trunk of a car. The new package comprises 400 speaker impulse responses, 23 microphones, 106 'Covers', 53 Altiverb rooms and outdoor spaces, 5GB of ambiences and sound FX, and 12 DSP modules from Leslie to GSM compression.

Audio Ease
+31 302 433 606
www.audioease.com

SSL Introduces Duendo V3

SSL has been busy developing a wide array of new products this month. Fresh from the team is Duendo V3, which effectively doubles the power of the Duendo platform with the new Hybrid Core Processing engine. The engine combines dedicated DSP performance with a computer's CPU processing power. Additionally, the enhancement allows users to upgrade Duende Mini to 64 channels and Duende PCIe to 128 channels. This power increase has enabled the development of X-Verb, a 'four slot' plug-in based on unique SSL algorithms providing digital density, warmth, depth, and detail. The company claims that the plug-in is not a convolution reverb based on impulse responses, but a true reverberation generator.

Solid State Logic
www.solid-state-logic.com

Uniquel-Izer has received a major work-over by RNDigital Labs. Additions include a larger GUI plus incorporation of the FFT Spectrum Analyzer and Spectagram from the company's Inspector XL Analysis Plug-ins into Uniquel-Izer's Filter Graph Display.

www.rndigitallabs.com

Damian Del Borrello, head of MoFo Productions, has installed a Fairlight Xynergi Media Production Centre at his facility in Perth. The system features the Xynergi controller, a desktop user interface enabling access to all features and functions of the Fairlight CC-1.

www.fairlightau.com

Paragon Studios has completed remixing the HIV/AIDS documentary House of Numbers. The facility in Franklin, Tennessee, specialises in audio, broadcast, and film post-production.

www.paragon-studios.com

A Legend In His Own Time

Dirk Brauner has been perfecting the art of microphones for over a decade. Hand crafted in Germany with a passion, it's no wonder Brauner mics are coveted by the world's most famous studios and producers.
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" Never before did I come across a microphone of this caliber. The VMA is the best microphone I have ever worked with. "
Elliot Scheiner : Steely Dan, Toto, Van Morrison, Fleetwood Mac, Sting, ...
" I got a call from a friend of mine who was working on a Janet Jackson mix that we had recorded vocals on and the producer, Rodney Jerkins, kept asking about the vocal sound, what mic we used, if it was a vintage mic. I had to smile when I told him it was not a vintage mic but a Brauner VMA! I LOVE my mic! "
John Horesco IV: Jermaine Dupri, Janet Jackson, Usher, Mariah Carey, ...

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brauner.microphones

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Wave Studios – *System 5-MC*

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broadcast news

streaming news @ www.audiomedia.com

New Junger Audio Products

Junger Audio has announced the release of two new products. The first is the ANA Series of input/processing cards designed to help terrestrial re-broadcasters. Using the cards, all of the synchronisation and loudness issues that occur when re-broadcasting incoming signals before sending them to the modulators are easily and effectively corrected. The second introduction is the company's new ESDI card that combines one SDI interface with one DSP unit, that automatically handles individual audio loudness processing.

www.junger-audio.com

DPA's Whalesong

BBC sound recordist Joe Stevens has been using the DPA 8011 hydrophone to record whale sounds in Alaska and the Arctic for the recently televised BBC One TV series, *Nature's Great Events*. The 48V phantom powered waterproof microphone is specially designed to handle the high sound pressure levels and high static ambient pressure in water and other fluids. The output is electronically balanced and offers more than 100dB dynamic range.

www.dpamicrophones.com

NAB Round-Up

The NAB Show took place in Las Vegas from 18-23 April, and is the world's largest electronic media show covering filmed entertainment and the development, management, and delivery of content across all mediums. Figures released during the show recorded a gigantic 83, 842 registered attendees, 23,232 international attendees, and 1,246 news media attendees. Furthermore, research has shown that last year, exhibitors generated more than $50 billion in sales as a direct result of the NAB Show. Dennis Wharton, NAB Executive Vice President, was impressed by the success of the show saying, "We appreciate the strong support of both exhibitors and attendees who continue to make the NAB Show the most important annual event for the electronic media marketplace." Read on for a round-up of new products unveiled at the show.

Genelec revealed its new 8020B Bi-Amplified Active Monitor, an update to the successful 8020A that offers improved features with a particular emphasis placed on environmental care. Audio-Technica introduced its new BP896 subminiature lavalier. Altermedia showcased Studio Suite 9 that features a plethora of new features and modules, as well as four new versions – Solo, Pro, Network, and Internet. Omnia introduced its A/XE Processed Audio Encoding for Windows that combines audio processing and encoding in one package.
Zephyr showed iPort MPEG Gateway, a 2RU rack-mount hardware enabling broadcasters in different cities to share multiple channels of broadcast audio using a single QoS connection. Axia unveiled its new PowerStation, an all-in-one IP-Audio console system that fuses analogue, digital, and microphone I/O, a console power supply, DSP mixing engine, and network switch into one package.

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TC Electronic has released the DB2 Loudness Control Processor, a cost-effective stereo and dual-mono DTV processor that accompanies the DB4 and DB8 versions. The new unit incorporates the company's advanced algorithms in an easy-to-operate 1U unit. The DB range of processors can accommodate from dual-mono/stereo up to 5.1-channel signal paths (including Upmixing and Downmixing) and incorporates the latest ITU BS1770 Loudness Control analysis. The DB2 offers broadcasters several connection options for both simple integration within a 75Ω AES-3 system and for legacy analogue-based systems.

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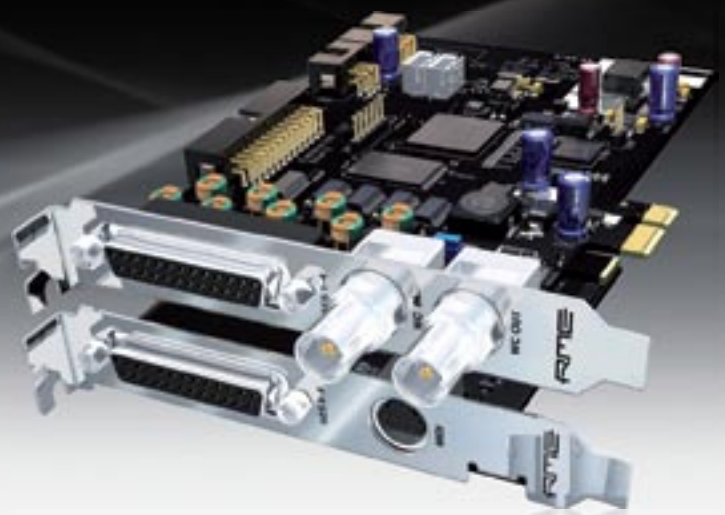

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The optional 19" BOB-32 breakout box provides an advanced solution for interconnecting multichannel XLRs and D-subs.

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The Conch Launch 2009

Now in its fourth year of celebrating the very best of British audio talent, The Conch Awards is back for 2009 with some exciting new features to complement the old favourites.

In such a short space of time, just four years, The Conch Awards has swiftly grown to become an acknowledged and much-anticipated night of recognition for the UK audio post production industry. Far from just receiving a clap on the back and a, 'good job mate' for those most deserving, the awards stand to applaud those achievements of editors, mixers, and all manner of sound titles, right across the industry spectrum, whether that be film or TV, drama, entertainment, or commercial.

The Conch Awards
Date: Tuesday 22 Sept, 2009
Venue: Kings Place, London

This is the idea that kick-started the very first Conch awards, and is an integral premise that still rings true four years later: that of recognising British talent in an open and accessible way for all. Dennis Weinrich, originator of the Conch dream, says the aim was to "…recognise British talent, in a traditionally under-recognised field"; and that goal has been achieved with amazing success. "The Conch has raised the profile of, and established the concept of, post production sound in people's minds who never really thought about it before. We now have a ground swell of people understanding more about what we do."

Top of the list for a fresh new look for the 2009 Conch Awards is the brand new venue: Kings Place in London, an elegant recital hall with capacity to entertain all. Also shiny new this year is the category for Best Foley Project for TV, Film, or Commercial. There is also the host of traditional awards (detailed below), all voted on by the industry and judged by the recognised high-profile judging panel. As in years past, you're also guaranteed a night of stylish entertainment and celebration with the cream of the audio world: a night worthy of dusting off your tux and buffing up your shoes for sure.

Categories for Nominations

Nominate any people, projects, or facilities that you think reflects great UK audio talent by using The Conch online voting form now. You could also be in with the chance to win a bundle of great audio gear, just by casting your votes for the *Audio Media* Unsung Hero award – further details will be announced in the next issue and on line, but don't let that stop you nominating now, because all those casting nominations will automatically go into the draw.

Please visit to cast your votes:
www.audiomedia.com/conch/conchnoms.html

- Commercial of the Year – **Sponsored by Film London**
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- Best Foley Project **(Film, TV or Commercial)**
- *Audio Media* Unsung Hero Award
- Film Soundtrack of the Year **– under £10 million – Sponsored by Munro Acoustics**
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- UK's Most Promising Newcomer – **Sponsored by Pinewood**
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- Production Sound Mixer of the Year
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Documentary program maker Guòmundur Gunnarsson recording interviews for Icelandic National Broadcasting.

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New Image for Galaxy Studios

The long-established Belgian studio complex continues to explore new technologies. JIM EVANS reports.

Galaxy Studios was founded in 1982 by Wilfried and Guy Van Baelen. Located in the heart of Europe between Brussels and Antwerp, the purpose-built, fully air-conditioned residential studio-complex floats on springs for isolation. The studios comprise a large live recording hall (up to 100 musicians) plus editing, mastering, mixing, and sound-to-picture suites.

The Galaxy complex, now confidently approaching its thirtieth birthday, raised more than a few eyebrows when it first came on the recording scene, but soon became established on the international circuit. The owners have never been scared to opt for innovation and have become adept at spotting changing market trends.

David Hawkins of Eastlake Audio was closely involved in Galaxy's design and build. He recalls, "One of the most surprising of all projects I have been involved with over the past thirty or so years came about when a young Belgian guy came to us and told me his family had farmland in Flanders and wanted to build a major ground-up studio complex. When he outlined the scale of his plans and the fact that he had an existing studio operating out of a disused chicken shed, I was somewhat skeptical to say the least. However, those seemingly outlandish ambitions eventually became Galaxy Studios, surely one of the most impressive ground-up studio developments in recent times."

In recent times, while continuing to enjoy steady audio recording and mastering business, Galaxy has widened the scope of its activities to include audio archiving, DVD and Bu-ray disc authoring, DVD production, and film score recording. The new 'image department' is fully equipped for most A/V and post production requirements, while a Neve DFC Gemini console is due to be installed soon.

Guus Fluit recently joined Galaxy as Marketing Consultant after 15 years with EMI Belgium. He says, " In my experience as A&R and Marketing Director, I have always enjoyed working in the creative environment of a studio, and have always been impressed by Galaxy's love for good sound and its quest for perfection.

"I am particularly impressed with its creative attitude to counter the problems the music industry is facing, and its vision to develop future business models. Besides remaining one of the last dedicated residential audio studios, Galaxy has chosen the path to become a one-stop shop for sound and image, and this opens up fantastic synergies and opportunities. It will be my task to communicate this new vision and mission to the world."

Galaxy's policy of being at the cutting edge of audio and video technology is reflected in the many and varied projects it is involved with. Take, for example, heavy metal act Within Temptation.

Within Temptation's most ambitious live show to date, Black Symphony, was a unique concert at Rotterdam's Ahoy Arena last year. Sold out months in advance, Within Temptation performed to 10,000 fans with the 60-piece Metropole Orchestra and a 20-voice classical choir, as well as on-stage stilt performers, costume changes, and an array of stunning pyrotechnic and lighting effects.

The colossal production extended to Europe's largest video screen (a massive 400m2), reaching across the entire width of the stage. Kerrang! magazine awarded the concert its highest 5-star rating, saying "this really is the greatest show on earth". The show was captured through 14 cameras in full HD 1080/25 by Cinévideogroup and directed by Hans Pannecoucke, and sound was supervised by Galaxy resident engineer Ronald Prent. The release of the SD DVD certainly did not go unnoticed, entering high in the European DVD charts, reaching the Top 10 across the continent. The full scope of the Black Symphonyconcert's quality, however, unveils on its Blu-ray disc format, allowing a crystal clear picture with a resolution of 1080i, which is a 6x better resolution than a DVD. At the same time, the superior sound of Blu-ray, which provides up to 5.1 channels of high definition uncompressed 96khz surround sound, makes you feel as if you were sitting next to the conductor of the orchestra.

The spectacular concert is one of the first dedicated Blu-ray disc productions executed by Galaxy Studios, and one of the first worldwide releases with these unique audio and video specifications. The post-production process (mixing, mastering, editing, colouring, authoring) was completely handled by Galaxy Studios and supervised by DVD Producer Wouter Strobbe.

MEDIA MATTERS

BELGIAN broadcasting mirrors the unique political and linguistic nature of the country. The cultural communities, rather than the federal authorities, are responsible for regulating radio and TV. Unlike most other European countries, Belgium does not have a single public broadcasting organisation, but two separate bodies, with their own regulations, running their own radio, TV, and external broadcasting.

Some 95% of Belgians are hooked-up to cable TV; one of the highest take-up rates in the world. Cable services offer dozens of domestic and foreign channels, including Dutch and French stations. Belgium aims to complete the conversion to digital TV by 2011, when it aims to switch off the analogue signal.

Luxembourg exerts immense media clout and has a long tradition of operating radio and TV services for pan-European audiences, including those in France, Germany, and the UK. The Luxembourg-based media group RTL is behind much of this activity. RTL's radio stations have been a part of the broadcasting landscape in France and Germany for decades.

Luxembourg's media empire extends to the skies. The country is home to Europe's largest satellite operator, Societe Europeenne des Satellites (SES), which operates the Astra satellite fleet.

The Dutch approach to public broadcasting is unique. Programmes are made by a variety of groups, some reflecting political or religious currents in society, others representing interest groups. These organisations are allocated airtime on TV and radio, in line with the number of members they have.

Public radio and TV channels face stiff competition from commercial stations, which mushroomed after a 1988 law lifted the ban on commercial broadcasting. The TV market is very competitive.

Les Misérables Continues Alcons Success

The Netherlands – Sound Designer Jeroen ten Brinke is using an Alcons Audio-based sound system for the touring production of Les Misérables.

The show has run for nine months in the Rotterdam Nieuwe Luxor Theatre, now moved to Amsterdam's 1,800-seat Royal Carré Theatre, a return to the capital's theatre after 17 years, and from here to the Stadsschouwburg in Antwerpen, so Jeroen's design – with equipment supplied by Peter Scheunhage at Dutch rental company Focus Showequipment – has to take variations in size and configuration of the venues into account.

"We have a total of three hangs of six LR14 ultra-compact line-arrays (RBN401 pro-ribbon HF + 2x 6.5" LF) per side for theatres where we have three levels or two balconies," explains ten Brinke. "But usually, with one balcony, we use the top and bottom cluster only, which are two arrays of six LR14s on each side.

"For front-fills, we use eight low profile SR9s (RBN401 pro-ribbon HF +2x 5" LF) and the centre clusters comprise two hangs of 12 LR16 left and right (RBN601 pro-ribbon + 2x 8" LF), and subs are BF302s (2x 15"). The complete system is powered and controlled by the Alcons 2x 2kW ALC's."

In the final implementation phase, ten Brinke was joined by West End Sound Designer Nick Lidster from Autograph London.

Zwolle College Invests in Midas Package

The Netherlands – Midas Consoles Benelux has sold a package of equipment including two PRO6 live audio systems, a Venice 160 console, and Klark Teknik Square ONE signal processing to the Deltion College in Zwolle, the Netherlands. The Deltion College provides around 16,000 young people with vocational training and education per year.

"This is equipment you won't yet see in many real-life theatres; a dream come true for every instructor and every student," says Gert Venema, tutor on the course's Sound and Theatre Techniques module.

The college's attitude to new technology is largely down to the passion of the instructors, according to Midas Consoles Benelux's Axel Nagtegaal. "A good specification is wonderful, but without passion it is sterile," he says. "The real added value and creativity of this project is the way the school, instructors, and consultant have worked together in a concerted effort."

For Nagtegaal, the equipment sale is just the beginning of his cooperation with the Deltion College. "The school can call us in for training, workshops, and master classes, and we are also offering internships to students with the potential for junior and senior management positions," he says.

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The Art Of Sound

KEVIN HILTON explores the growing acceptance of sound as art in the UK and talks to some of the main players .

The great proportion of British people are a little sniffy about art and much to the disgust of the purists, it is no longer just about painting. Photography, video and sound are now the basis of gallery exhibitions, interpreting the media in new ways and forms.

This is something that has been happening with photographs and video screen installations for well over ten years but more recently audio has become a means of artistic expression that moves the medium away from being about music, conventional composition and tonal construction. The idea goes back to Italian futurist painter Luigi Russolo's 1913 manifesto *Art of Noises*, which declared "we must break out of this narrow circle of pure musical sounds and conquer the infinite variety of noise sounds".

This led to Pierre Schaeffer creating musique concrète, which was then further developed by Cage, Stockhausen, Varèse, and others, paving the way for the BBC Radiophonic Workshop, the industrial electronica movement of the '70s and the synth-pop boom of the early '80s. In the last few years experiments in sound have been staged in galleries, museums and city squares around the world but the UK has been slow to respond. That's changing this year, which has seen significant exhibits based on sound, with more to come.

The unlikely starting point was the sedate south coast resort of Bexhill in East Sussex. The 1930s modernist building the De La Warr Pavilion, now an arts centre and concert venue. From January to March it hosted an exhibit by composer Michael Nyman, featuring video filmed over the past 15 years in various locations, with the segment on bell makers coming close to musique concrète, and *Anthem*, an installation by sculptor, and founder of Audio Arts, a CD (previously cassette)-based magazine, William Furlong.

Anthem consisted of 48 box-less loudspeakers suspended from wires. Recordings made by Furlong on location at the Pavilion last summer were played around 24 of the loudspeakers, with visitors and locals talking about the venue and reflecting on Bexhill itself. Furlong used his trusty old DAT machine for the interviews and passed the recordings on to Sonica Music studios in south London, which he has been using for his audio projects for ten years.

Sonica was founded by electronics engineer Matt Clark and he and his brother Paul have built much of the equipment they use, although the ubiquitous Pro Tools was used to mix Furlong's interviews. The studio's main business is post-production but has been involved in sound art for some time. Paul Clark comments that while the artist has the concept, he or she needs someone who knows what to do technically to realise it. Sonica is currently working with Hilary Champion, a Fine Arts Masters student at the University for the Creative Arts in Farnham, whose work on war and peace turns recordings of weapons into musical instruments.

Sonica's DIY approach echoes the BBC Radiophonic Workshop. Former members of the Workshop are playing live at London's Roundhouse this month and during August the venue will be a giant musical instrument for a project conceived by David Byrne. For *Playing the Building: An Installation*, cables and wires will be attached to pillars, pipes and beams in the Roundhouse, and then "played" from a keyboard in the UK premiere of an event staged last year in New York.

Among other events this month are *Futuresonic 2009* and the Social Technologies Summit in Manchester, and *Sonic Art* at the Blank Gallery in Portslade, near Brighton. This is curated by Mike Blow of Evolutionary Art and seeks to "explore sound in art through recordings, installations, new instruments and visualizations".

The coming together of sensory information is at the heart of work by Martyn Ware, a founder member of The Human League and Heaven 17. Through the Illustrious Company, which he founded in 2001 with Vince Clarke from Erasure and Yazoo, Ware has developed the 3D AudioScape spatial surround sound program, which he has used for the Future of Sound installations and performances.

In June a Ware-designed installation will be running in London's Leicester Square, part of a project to promote the area and help visitors appreciate it as more than just somewhere to go to the cinema. Sound Life London features two rings of six loudspeakers and will characterise the city through sound – the noise of traffic, the River Thames, church bells, the speech and languages of Londoners, material from the National Sound Archive, and songs about the city. "We asked ourselves that if we were creating a composition in sound that was indicative of what London sounded like to someone who had never been, what would you do," Ware says.

Ware feels the UK has been behind other counties in embracing sound art but with new media and technologies the form is finally making itself felt. "It's been hard to sell, and has been looked down on, because there's no commercial value to it," he says, "and has usually been publically funded or done by students for virtually no money. We are coming out of that phase, thank God."

For Ware sound art is as much about the setting, whether in a gallery or a public space, as it is the technology, with the concept feeding off the surroundings. With a new found enthusiasm for something that perhaps only other people and countries did, perhaps the UK will become one big sound art installation itself..

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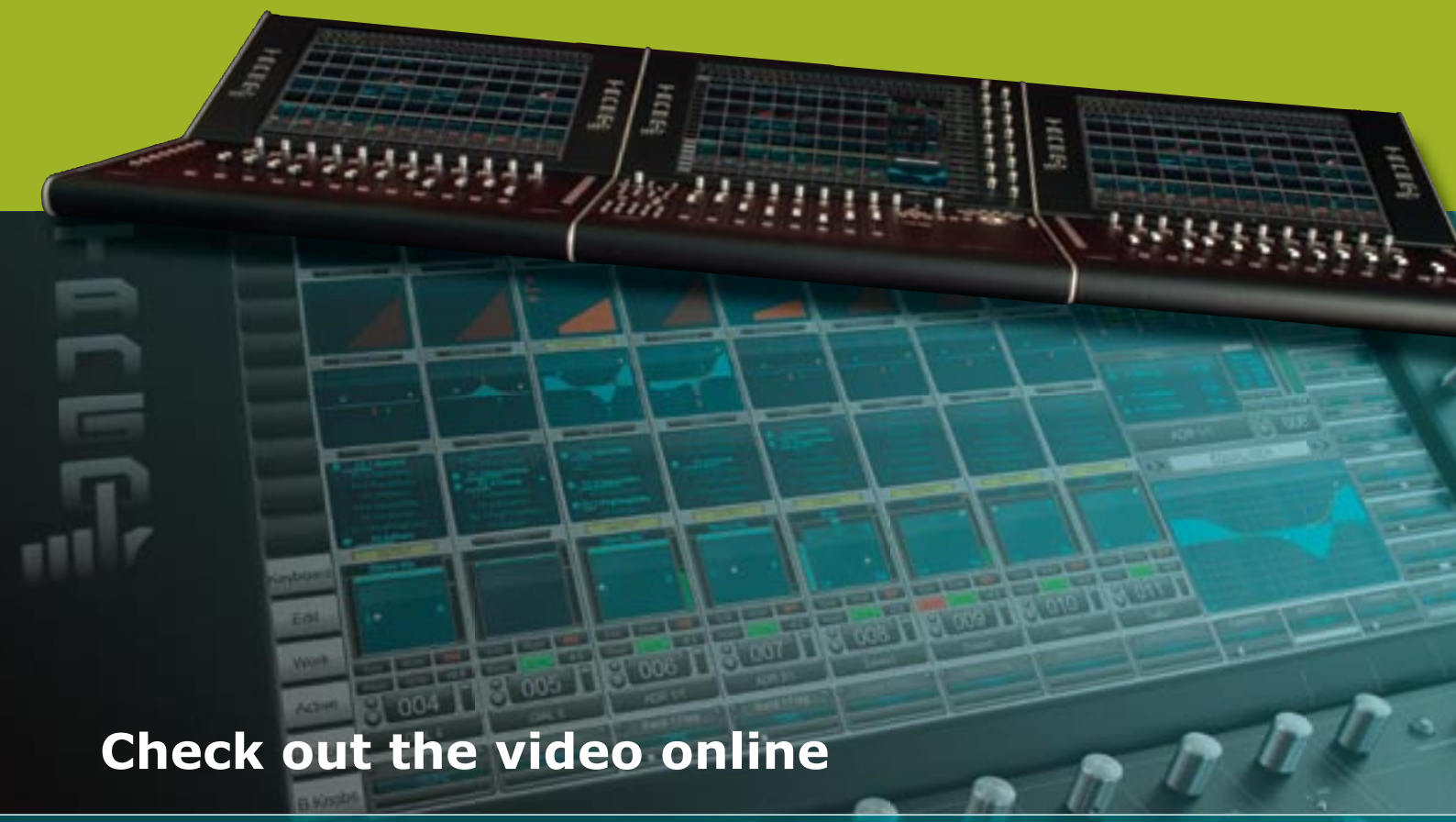

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ADAM: 10 Years Young

ADAM Audio is one of the success stories in monitoring, with a growing reputation for exceptional quality at a sensible price. Now, with 10 years under its belt, there's new product, and a good excuse to delve into the reasons for that success…

It's 10 years since it's ADAM Audio was created, and it's still growing strongly in a heavily populated market, even during these difficult economic times. ADAM marked this milestone recently both with evening celebrations at the recent Prolight + Sound show in Frankfurt, and with the introduction of the brand new SX Series monitors. The SX Series features a new tweeter with X-ART technology, a new woofer with HexaCone technology, new A/B amps, and a frequency response of 35Hz to 50kHz. *Audio Media* spoke with ADAM's founder, Klaus Heinz.

Klaus Heinz, founder of ADAM Audio.

Audio Media: *How did it all start?*

Klaus Heinz: I was intrigued by speaker concept from Dr. Oskar Heil called the air motion transformer. This is a way of reproducing high frequencies in a rather different way from what you find with voice coil systems that drain 99.9% of the actual production today. I constructed a tweeter with that principle, that seemed to have very positive properties; it seemed to sound better – better transients – and I thought this was enough to justify the foundation of a company.

So, my partner and I started in 1999 to take the tweeter and put it into some studio monitors. The first thing to do was to go to the AES convention in 1999, and within a few days, we had customers, we had positive reactions – we had Rupert Neve stopping by and saying "this is an excellent design, young man," – and I was 50 at that point in time.

From then on we tried to build up the international business immediately. We grew to, now 60 people, with a nice factory in Berlin, and we have companies in the US and LA, one recently founded in the UK, and another that is to address the Chinese market. We have distributors in more than 50 countries and the overall business is still growing.

AM: *What makes ADAM different?*

KH: I think the overall sound quality is the number one issue why ADAM is successful – why ADAM could enter the German broadcast scene where people are normally very conservative and looking for known brands, and still succeed simply because the sound quality was so convincing.

Also, during the ten years of putting the same tweeter in all our models, we went down and down in price. The big shift for ADAM was the introduction of a model called the A7, which sells for approx. US$1,000 a pair… We now do more than 1,000 pieces a month of this model. And we introduced an even cheaper model called A5 last year, which is coming out now.

Besides this, I redesigned the core of ADAM – the S-series monitors, from the ground up. We now have the new SX series. I have a new tweeter that has spectacularly better technical performance, such as 4dB more efficiency, which is an awful lot in the transducer business. There's a 50kHZ real bandwidth (-3dB point), which is extremely rare if achieved at all from any other tweeter. And most importantly, does it sound better? Fortunately the reactions have been as clear as they could be.

AM: *What do you think makes a person say one monitor sounds better than another?*

KH: We are in a subjective domain here. There is no clear answer, of course. You can have speakers A and B in one room, and prefer A, and when you go to the next room, you prefer B. You might prefer A with one CD, but with another CD, you prefer B.

Yet there is a canon of opinions, of listening, of good guys with golden ears, that say 'this is a better speaker', whatever this physically means. If you talk to each other, then you know this model from this manufacturer does that and that, and in most cases you will agree. So the judgement comes from many people's opinions over a period of time. You need both many people, and you need a certain time to elapse before you can really judge a speaker.

This is unlucky for a designer who wants a clear result, but on the other side, it's a chance for small companies like us to succeed… The subjective domain is important enough in our business, that individual designers like me can have success, and are not victim to big companies.

Recently, things changed for ADAM in the UK. Specifically this involved the creation of ADAM Audio UK, a new company headed up by one Kevin Bent, and now the exclusive representative of ADAM Audio in the UK.

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The Nuttiest Sound Around: *Madness*

MOJO WORKING talks to Clive Langer and Alan Winstanley, and discovers how the heavy heavy monster sound of Madness came to be put together in the middle of the night, and mixed in a shed.

The Specials may have spearheaded the British ska revival that emerged during 1979, but by the end of the year the race was on to see whether the Coventry-based band or North London's self-styled 'Nutty Boys', Madness, would release their debut album first. Madness just barely beat The Specials to the punch, in the process establishing a production partnership between Clive Langer and Alan Winstanley that also went on to generate hits by artists such as Elvis Costello, Dexy's Midnight Runners, Morrissey, Bush, David Bowie, and Mick Jagger.

Beginning To Feel The Heat

Winstanley, who started out as an engineer at Fulham's TW Studios, first met Langer when the latter's band, Deaf School, booked time to record an album with Rob Dickens, head of Warner Bros. Music, producing. "[Clive] was always the one who stuck around to see how the process went," recalls Winstanley, who had worked with Martin Rushent, including engineering several Stranglers albums with the producer, and with Stiff Records acts such as Rachel Sweet and Lene Lovich, at the basement studio.

When several members of Madness, fans of Deaf School, approached him in mid-1979 to work with them, Langer, who had also recorded with Mutt Lange and Muff Winwood, saw an opportunity to try his hand at production. Those tracks, recorded at Pathway Studio in Highbury, caught the ear of Jerry Dammers, keyboardist with The Specials, who released the band's first single, *The Prince*, on his 2 Tone Records label in August 1979. The single peaked at number 16 in the UK chart, but secured Madness an album deal with Dave Robinson's Stiff Records.

Robinson put Winstanley's name forward to produce the album, having worked with him at TW Studios. The band wanted to continue working with Langer. Having also worked together on tracks for The Yachts as well as Langer's post-Deaf School band, The Boxes, Langer and Winstanley had no problem pairing up; thus, one of the most successful UK production teams was born.

"Dave Robinson told us the Specials' album was about to come out, and he wanted to precede that release by a week or so. So we worked non-stop for three weeks," reports Langer. "We rehearsed quite a bit, knocking the songs into shape. The rhythm section had always been good, so we were able to do things quickly."

Rockin' In A Shed

Winstanley takes up the story: "We did the first week at Eden Studios. The reason we went to Eden was that The Specials were in TW with Elvis Costello producing. When we got to TW for our second week they'd left a tape lying around, so we were able to spy on them and hear what they'd been doing."

He continues, "The third week was supposed to be at the studio that Martin Rushent and I were building in the grounds of his house near Reading [subsequently named Genetic]. The equipment had turned up but the studio wasn't ready. So the first Madness album was basically mixed in his shed!"

Once More With Feeling

Winstanley recollects that Robinson arranged to come by and listen to the album on the final night of mixing. "We planned to meet him at the local pub about 7 o'clock and he didn't turn up until closing time, about 11; we were totally out of it!" he laughs. Robinson promptly declared that the title track, *One Step Beyond*, would be the first single. The producers pointed out that the instrumental track over which Chas Smash, not yet a full-time member, introduced the band, was just over one minute long. "Dave said, 'Just go once more round the houses – double it up. I'm going back to London, have it in my office by tomorrow,'" recalls Winstanley.

"By then it was about 2 o'clock in the morning and we were in no fit state. So I put the mix through a couple of mono Eventide Harmonizers and tagged it onto the end, so it goes through it twice. The idea was that it was a demo for him and we'd go in the next day and do it for real. By the time we reconvened to do the remix he'd mastered it and the lacquers were on the way to the factory! And it was a top 10 hit."

"The idea was that it was a demo for him and we'd go in the next day and do it for real. By the time we reconvened to do the remix he'd mastered it and the lacquers were on the way to the factory!"

Chipmunks Are Go

As for the album, he says, "From the day we started recording it was in the shops five weeks later," ahead of The Specials.

A harmoniser also gave sax player Lee Thompson his signature sound, notes Winstanley: "When he first started playing tenor sax, Lee didn't realize it was a B flat instrument, and it was never quite in tune. So we'd harmonise it to cover up the fact that he was out of tune, and that became his sound."

As for Mike Barson's piano, he continues, "Rather than harmonise it we would double track him then varispeed the machine slightly. We thought that was the way the Beatles would have done it – or maybe I'd read that's how they did it."

"I remember finishing the album and going home feeling really depressed, thinking it was a load of rubbish," says Langer. "But a couple of days later, with a bit of sleep, it sounded good. It was a good mixture, capturing what they were like live but with a bit of discipline in the studio and a few poppy moments."

One Step Beyond reached the number 2 position and remained in the UK chart for over a year. With Langer and Winstanley at the helm, Madness went on to clock up 214 weeks on the UK singles chart between 1980 and 1986. The pair has produced all but one of the band's albums, and recently finished working on their ninth full-length and 30th anniversary release, *The Liberty of Norton Folgate*.

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CALREC APOLLO

Broadcast Console

Fleet and able to process a staggering 1,020 paths, Calrec's new Apollo console is definitely heaven-sent for those in broadcast, says STEPHEN BENNETT.

When you've named your top of the range product Alpha, there's really nowhere else to go as far as the Greek alphabet is concerned. So UK-based Calrec has turned to deities when christening their latest console. Apollo is based on the company's Bluefin2 HDSP FGPA (Field-Programmable Gate Array) technology to provide an extended and enhanced feature set over the Alpha – though that desk will remain in production alongside its more heavenly named brethren. Introduced at NAB 2009, Apollo can potentially have a staggering 1,020 processing paths, 128 program busses, 96 IFB/Track outputs, and 48 auxiliaries. Though these numbers are lower at 96kHz, the console still retains an impressive amount of power – and it's available all of the time, with none of that tedious juggling of DSP resources common to digital systems.

How Many?

You may be asking yourself why anyone would need this number of processing paths? Well, if you in the broadcasting sector you won't be, says Henry Goodman, Calrec's Business Development Manager. "If you're working in 5.1 or other surround formats, the channel count really mounts up." To feed these paths, Calrec's Hydra2 networking technology is a 8192x8192 cross-point router enabling all I/O to be situated remotely from the console. "Each Hydra2 I/O box can have various input/output units that can provide various formats, such as analogue, AES, MADI, and SDI, all with either copper or fibre connectivity," says Goodman. "We've taken the concept of allowing for a remote I/O box that could be situated for an Outside Broadcast application or placed down on the studio floor wired by Gigabit Ethernet, and moved that forward to its next level. This has enabled us, alongside the DSP technology, to develop our own router technology, and each console can be incorporated into a larger network. Our premise, in terms of channel structure, was to allow our customers to have an Alpha level desk, but with a similar channel count at 96kHz. The routing isn't dependent on the DSP structure, and you could have, for example, a situation where you are connecting more than one console together, and because you have one of these router cards in each console, you have eight thousand squared routes in each desk."

Custom Decisions

Like other manufacturers, Calrec understands the advantages of utilising off the shelf DSP technology rather than developing propriety devices themselves, as Goodman explains; "What's clever about it is the way we use them!" he says. "One of the things we learned long ago was to avoid using custom chips – most of our customers would get very nervous if we started talking about and developing something that they could only buy from Calrec. There are some people using FGPAs for DSP processing, but we are the only broadcast company using the newer chips, and no one else is approaching us in this sector with respect to channel counts." While the DSP and Hydra2 system are improved versions of technology already used in earlier Calrec consoles, the control surface itself is something special – according to Goodman. "This is the part of the desk which is completely new and uses technology we have never used before." The console uses OLED (Organic Light-Emitting Diode) displays alongside touch screens for setting up routings and displaying EQ curves and so on, which makes use of touch membranes overlaid on the OLEDs. "The Apollo's channels are managed over 12 dual layers and on up to 320 physical faders, and assigned panels can be used to control various parameters," says Goodman. "Because we use this OLED technology, the controls are not dedicated – they are 'soft'. So what we can do is to use these to map a set of controls to individual panels. You use the desk in an 'assigned' way of operating – which is like a facsimile of the 'traditional' Calrec centre section – or you can run the desk very much like a traditional analogue configuration. The eight 'wild' controls above each fader can have pretty much any function, such as EQ controls or auxilaries for example, and you can map these to create an analogue-like channel strip." This can be done per channel, per panel (eight faders wide), or over the whole desk. "One of the challenges of designing digital desks is providing feedback to the operator – especially on one which operates on multiple layers," says Goodman. "The Apollo gives the operator a lot of visual feedback very quickly. Being able to swap between these two ways of operating can allow the user to easily change between the more detailed mode of operation when setting up, then switching to the 'wild' mode to run the actual show."

Under Pressure

In the heat of a broadcast, reliability is ultra-important, and Calrec has tackled this area with multiple redundancy systems, so you don't miss a second of the broadcast. "Not only is the system very compact, but we have redundancy on the DSP cards, the power supplies, the router, and the processing systems for communication to the desk," says Goodman. "Broadcast applications are effectively live recordings, and our customers would be asking some serious questions if we didn't build in this level of redundancy."

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THE REVIEWER

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series 5

They say that home is where the heart is; and SIMON TILLBROOK finds that the Everest ECS-410 fits in right at the centre of Summit's popular processing family, with all of the hereditary traits that you'd expect from the brand.

SUMMIT AUDIO EVEREST ECS-410

Recording Channel Strip

The Summit Everest ECS-410 is offered up as Summit's flagship channel strip. The ECS-410 is made up of four sections, each independently accessible via the rear panel connections.

The four sections of the ECS-410 are the Mz2 microphone preamplifier and DI, the Dc1 Dual mode dynamics processor, the Fe1 three-band passive equaliser, and the Db2 Master output/DriveBuss.

The input and output stages of the Summit Everest ECS-410 give you a choice of either solid state or tube processing, maximising the sonic characteristics and flavour that can be achieved. In the case of the Mz2, we have, after the gain, an interstage Jensen line transformer for some additional character before feeding into the solid state or tube stages.

A unique aspect to the Summit Everest ECS-410 is the TouchPatch routing system. A series of buttons on the front panel allow you to configure the order of process sections that feed into the DriveBus output. There are ten different configurations that are all detailed in the easy to follow user manual. Any section not in use through the TouchPatch routing can be independently used and accessed through the rear connections.

The unique aspect of the ECS-410 is the TouchPatch routing system. This allows you to route any of the sections both to and from any other section, or bypass all internal routing to allow external independent access to the four process sections of the ECS-410.

The rear of the Summit Everest ECS-410 clearly divides the available connections in relation to the four sections.

The Mz2 Pre has balanced XLR I/O, plus a TRS balanced output and insert TRS. The insert point appears post the transformer and gain control, and pre the solid state or tube preamplifier. DI input is via the front unbalanced Hi-Z jack socket.

The Dc1 dual mode compressor has balanced XLR I/O, jack sockets for stereo linking another unit, and side chain input.

The Fe1 passive three-band equaliser simply has balanced XLR I/O, and the Db2 DriveBuss has balanced XLR input, plus XLR and TS outputs.

Front Panel Sections

The first section on the Summit Everest ECS-410 is the Mz2 Preamplifier. We have +60dB of gain on the rotary control with ten segment LED input level metering. A set of switches gives us access to phase reverse, phantom power, -20dB pad, high pass filter with a 60Hz turnover frequency, and discrete solid state or 12AX7A tube output selection. An LED indicator lets you know that the internal TouchPatch system is engaged.

The Dc1 compressor has two modes that can be selected next to the LED gain reduction meter. Classic mode is a soft knee smooth and light compression, and Tight is a more aggressive limiting style of compression. A TouchPatch LED indicator and a Bypass/Link switch follow rotary controls for the usual parameters. The Fe1 three band passive equaliser follows with cut/boost and frequency selection for each band.

Frequency selection rotary controls are stepped selectors and the high and low bands are switchable between peak and shelf characteristics. In peak mode all bands have a bandwidth of two octaves. A TouchPatch LED and bypass switch complete the Fe1.

The final section of the Summit Everest ECS-410 is the Db2 DriveBus master output. To the side of the output VU meter are LED indicators for overload and drive. The latter gives a visual idea of how hard the high voltage output is being worked. A switch lets you select either bypass, or a choice of solid state or tube output options.

The small Drive rotary knob controls the amount of signal feeding either the tube or solid-state output amplifiers as you have selected for added tone to the sound. A large Master Output level control gives up to 20dB of additional output gain.

In Use

Starting with the Fe1 equaliser, this is based on the Summit FeQ-50 and delivers all the musicality that this passive design has to offer. Even when used with fairly extreme levels of cut or boost, the Fe1 never sounds really aggressive and excessively processed. This theme carries through to the Dc1 compressor. In classic mode the Dc1 is all about subtle, smooth, and uncoloured control. The audio signal dictates the performance as the Dc1 follows and rounds off the edges sympathetically. When switched to Tight mode, we are given a more extreme and punchy sound, but still very musical and smooth even with this setup.

The impression is that the Summit Everest ECS-410 processor sections are all about smooth musical interaction, and this works beautifully.

The Mz2 preamp and Db2 DriveBus output sections proved to be extremely flexible. When I tested the Summit Everest ECS-410, I used them both in many combinations and individual instances in both solid-state and tube modes. You can achieve a clean crisp stunning quiet feel, or a full-blooded saturated and aggressive tone. The versatility of the ECS-410 when it comes to sonic flavour is exceptional.

The TouchPatch routing is something you appreciate more as you use the ECS-410. Quick setup changes between onboard configurations, and the ability to externally access unused stages of the Summit Everest ECS-410 means that a single unit can be accommodating various session process requirements simultaneously.

Conclusion

The Summit Everest ECS-410 is everything I have come to expect as a user of Summit Audio equipment. Each of the four sections performs fantastically, giving numerous sonic possibilities. The TouchPatch system is a very welcome addition, providing us with the opportunity to use each of these process stages on a single signal, or share with other parts of our system.

The Summit Everest ECS-410 is about musical flexibility and, in this regard, is a wonderful new member of the Summit range.

INFORMATION

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THE REVIEWER

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FOCUSRITE ISA ONE

Dual Path Mic Pre/DI

Mastering without limits; DAVE FOISTER finds the ISA One is an all-in-one tool that doesn't restrict its options and thus appeals to all.

Focusrite's reputation is founded solidly on a long history of good engineering and no-compromise audio quality. Fairy dust and snake oil do not feature. The range that best exemplifies this is the ISA series, a range of tracking tools now used extensively in studios and live environments when pristine, reliable, reproducible signal processing is required.

One of the more recent incarnations of the ISA franchise is the ISA One, which features the renowned microphone preamp from the range in an unusual package that includes much more than just the preamp. It sets out its stall as a serious piece of kit by contriving to look more like a laboratory test instrument than a studio processor; there's no attempt at rack-mounting options, but a sloping front panel, a tall narrow case, and a handle on the top that make it clear this is intended for the itinerant engineer/producer/musician to bring a major part of their sound into any studio with them. It even comes in a chunky flight case.

In ISA Control

The controls on the preamp section will be familiar from other ISA models. Gain is handled in two ranges on a detented knob with continuous fine gain available separately; there are front-panel illuminated switches for phantom, phase, a high-pass filter and an insert loop, and a selector for mic or line inputs or the front-panel instrument jack (although there's more to that jack, as we shall see). A trademark of the modern ISA preamp though is the impedance switch – a feature introduced to the ISA pre-amp in 2002, and still rarely seen on microphone preamps, despite the useful variations it offers.

The manual gives a good explanation of how the input impedance interacts with the microphone characteristics to influence the sound, and what it says in effect is that higher settings will produce higher signal levels, flatter frequency response, and improved HF response, while lower settings will bring out the inherent character of the microphone, possibly even exaggerate it. Thus it offers low (600Ω), medium (2400Ω) and high (6800Ω) settings, as well as the distinctive 1400Ω setting that characterises the classic ISA 110. Whatever the theory, the experience of adjusting the impedance with a familiar microphone makes you wonder why more preamps don't have this function, as it can tailor the sound to the source in a very different and more subtle way than EQ, and really bring out the best in the microphone. Working with a fairly powerful male classical voice, it enabled me to balance the fullness and warmth of the voice with the detail of the upper end without having to consider using anything else.

A Little Bit Extra-ordinary

Alongside this is the aforementioned instrument input, and this is where the ISA One begins to depart from the norm. As well as having access to the main preamp, the instrument jack has its own separate circuitry delivering a DI output on the rear panel, as well as a loop-through for an amp. This means it delivers two independent signal paths through the unit, both shown on separate LED meters, although the main vu meter is dedicated to the principal preamp. Suggestions in the manual for exploiting this dual-path configuration include recording electric guitar and vocals simultaneously through it, and recording a guitar using both a DI and a mic on the amp, all through the ISA One.

With A Twist

Next up is even more of a twist on the basic package: a headphone output with a mysterious switch labelled 'Cue Mix', and this too has a variety of uses. By default it provides a fixed mono mix of the two input sources, but for more sophisticated foldback use, it has a stereo cue input that can be fed from a desk's conventional foldback send, giving the musician local volume control and the option to switch to the source signals for checking if required. A final option is the use of an additional mono external input, which overrides the instrument input to the cue circuit. This allows a mono foldback send from the recording system to be heard alongside the signal being handled by the main preamp, and Focusrite suggests this set-up for latency-free monitoring when using a DAW, as the live source signal will not have passed through the DAW.

A thoroughly useful optional extra is a digital output card, user-fittable, which provides AES/EBU, SPDIF, and ADAT outputs all the way up to 192kHz 24-bit, including two-wire mode. AES/EBU and wired SPDIF require separate breakout cables, but optical output is switchable between ADAT and SPDIF. The two signal paths through the unit appear independently on whichever output format is selected. Wordclock in and out are supported, and a comprehensive section on the front controls the digital setup.

One For All

I must admit to being slightly puzzled as to who the intended market for the ISA One is. Some of its features belong in the studio, some in the control room, and the only place where you might use all the bits at once is a project-type studio where everything happens in one room, including loud guitar amps. On the other hand, for somebody wanting to introduce a bit of Focusrite ISA magic into such an environment, this is the ideal way to do it. In any case, the quality of the design and engineering, and the thought that's gone in to the features and functions, make this well worth having in the arsenal in any context, and its portability means you can use what you want, where you want, as circumstances demand.

THE REVIEWER

Since doing the Surrey (UK) Tonmeister course, DAVE FOISTER has produced, engineered, and played on innumerable recordings in the classical, commercial, folk, jazz, and TV music areas, as well as live sound operation. He currently manages the Guildhall School of Music and Drama recording department, and spends spare time watching racing cars and wishing he was driving them.

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STATE OF PLAY

The big political blockbuster of the year posed some interesting challenges for Production Mixer MARK ULANO. Mark recounts the experience, from LA to DC.

We were winding down production on Iron Man, when I received a phone call from the producers to come and work on Kevin McDonald's (*Last King Of Scotland*) next picture, *State Of Play*. It was based on the successful BBC mini-series from a couple of years before, where it had been set in London and was a story of political intrigue, murder, and betrayal – rewritten to be set in fictionalised contemporary Washington D.C.

I had seen Kevin's film the previous year and had liked it very much, plus the folks calling us had always treated us well and been very supportive of the sound department's contribution. The first portion of the film would shoot in Los Angeles both in practical locations and on one of the largest newspaper/newsroom sets ever built. The massive set was reminiscent of the set from 1976's *All The President's Men*, but it was a two-story glass and steel affair spanning wall-to-wall two whole stages at the Culver Studios. The rest of the work would take place in Washington, D.C., promising to be a fascinating experience as this was a presidential election year in the highly politicised capital.

A time was set for me to meet the Director and discuss the project. I dug into my usual semi-obsessive prep and watched every film the Director had done since the beginning of his career. The meeting went very well. It was clear that he really cared about this project and that he was a committed pragmatist, determined to capture the original performances of his stellar cast. He also was very clear about his intention to not glamorise D.C. but to play up its underbelly, unless the 'set dressing' of Washington's pomp and circumstances was on official display. This meant nights, alleyways, bureaucratic settings in public buildings, the Metro, and so on. This implied a lot of potential for 'run and gun', and minimal control of practical locations, ultimately resulting in a documentary feel. This also meant a mixed media approach, shooting film for most of the story but shooting Sony/Genesis HD for the official events, such as congressional hearings, news events, and so on. Furthermore, there were many telephone conversations written into the script, and he wasn't yet clear about how he wanted to approach them.

I then contacted my friend and Boom Operator of many years, Tom Hartig, to make sure he was interested and available, and also Adam Blantz, our long time Utility Sound Technician/Best Boy of the Sound Department. Both gentlemen were available, and into it. In addition, Johnny Medeiros and Peter Thorens would take on the video assisted engineering tasks. These guys also made a very strong team for what would prove to be a fast and furious shoot.

Everything Changes

Around this time the casting went through some changes, finalising with Russell Crowe as the male lead, Rachel McAdams, female lead, and supporting players including Ben Affleck, Helen Mirren, Robin Wright Penn, Jeff Daniels, Jason Bateman, and others.

I began a more in-depth prep, beginning with the sound breakdown of the script. I always go through a script three times: first for the journey of the film, taking the ride, next a detailed identification of any sound related issues detectible on the page. From this, I generate a Q&A list. I pursue the answers to this list from all the usual suspects and then return for another reading to comb out anything I might have missed and reintegrate any new information that emerged from my research.

Who's Calling Please?

The telephone issues had some definition as the art department had already committed to, and installed, a large, digital PBX phone system into the newsroom set, requiring consultation and technical interface with the 'house system'. Their phone man, Stephen Castellano of CasCom, came in and programmed the system to accept our control of the specific lines for active, two-way phone scenes, à la *All The President's Men*. That film was famous for its groundbreaking use of live phone scenes and ultimately won Sound Oscars for the brilliant Jim Webb, Arthur Piantadosi, Les Fresholtz, and Dick Alexander. Of course, those were the old analogue phone days, so we had significant new wrinkles to work out.

CHANNELLING THE ART

Mark Ulano uses the Aviom digital snake system for moving precious signals around a busy film set. Aviom's Pro16 and Pro64 Series solutions offer a modular approach to building digital snakes for almost any event, large or small. The addition of more I/O or multiple digital splits is as simple as plugging in a Cat-5 cable thus enabling easy and flexible audio network reconfiguration. The Pro16 Series has a distribution area of 150m, providing unlimited lossless digital splits, no ground loops, RF interference, or signal degradation and no complex programming or setup.

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We ended up using the JK Audio ComPac phone interface with keypad and cellular capability.

Non-linear, file based multi-track recording (in my case, Zaxcom Deva) really helps with these situations. I can record multiple components at the same time, including my production mix of the scene, the on-camera miking, live miking of the off-camera, as well as the telephone track (the occasional conference call scene becomes a multiplier of this approach).

In addition to the PBX, we needed live interface with cell phones for on camera dialogue. As anyone who has done this knows, there are inherent digital delay problems, affecting both timing of the performers as well as audible overlapping sound from the cell phones, especially when the off camera side of the conversations were not from the real actors. Thankfully, Russell Crowe and the Director were pros and when they ran into problems with cellular phone reception for the off camera actor (also off-sight at her hotel), we just had the script supervisor read the off camera lines. Whatever works!

Comprehensive Coverage

The sheer physical scale and nature of construction of the newsroom set also required due diligence regarding RF propagation/antenna networking. We experimented with several methods, including the big PSC RF MultiMax Multi-Coupler, ultimately deciding on a primitive but effective old school method of booming directional Batwing-style antennas with the dynamic movement of the talent. We used simple antenna splitters to cover the size of the real estate with multiple drops. Since this project, I have come to use the new A5000 CP Sennheiser helical antenna with great results, and now mix it up with one A5000 CP and one Batwing.

All the prep paid off as the newsroom set almost became a character unto itself. We were shooting through many layers of glass, Steadicam shots through multiple environments, up and down, in and out again. Everything went off without a hitch until, around the third week in, we suddenly experienced sudden level shifts from my mixer on one of the pots. After some anxious moments, we took a global look at the system on the Studio Manager control application bundled with the Yamaha that revealed intermittent level changes happening on that gang of four faders. We switched out mixers to a back up unit and sent the Yamaha off to the shop. Later we learned that we had just worn out that fader and it needed to be replaced – no big deal, although it would take a little A/B-ing in post to rematch the levels from that scene's work. Such is life in the real world.

The shooting crew was a great bunch – collaborative filmmakers all. The Genesis work went smoothly, as we were able to spend prep time at Panavision with the camera department listening to the bodies and mechanisms and maximising whatever we could for quiet operation, quite a challenge on these primitive HD machines. Cooperative pros all, the camera crew never complained when we asked to shut off 'hummy stuff'. Props also worked closely with us both on the telephone stuff, and also when building practical mics into all the congressional hearing work.

LOCATION GEAR

I am using a custom-built Chinhda Cart. The equipment stack includes: Aviom's 16x16 digital snake, two Apple Mac-Minis for music playback/media management/Internet, etc, Marshall rack mount double video monitor, Mux-Lab video Baluns, 7" touch screen monitors for the computers (switchable to NTSC for additional camera feeds), Fireface 400 for Master clock @48.048 sample rate, Samson C-Control matrix, Roll logic for machine control, two Zaxcom Devas, a Yamaha 01v96 VCM mixer with AES/EBU I/O to both Devas, and rack mounted Glyph Key hot swappable hard drives.

Power is supplied by a ProSine 1000W inverter. The ProSine is fed its AC from a Furman AR-15 II Voltage Regulator. Also plugged into the inverter is a PSC Cart Power 12 volt isolated distribution for the 12-volt devices in the system. All this is connected, via the Aviom kit, by CAT5e cable to the FOH cart (as we call the set cart). We can go up to 500 feet before we need to put a repeater in.

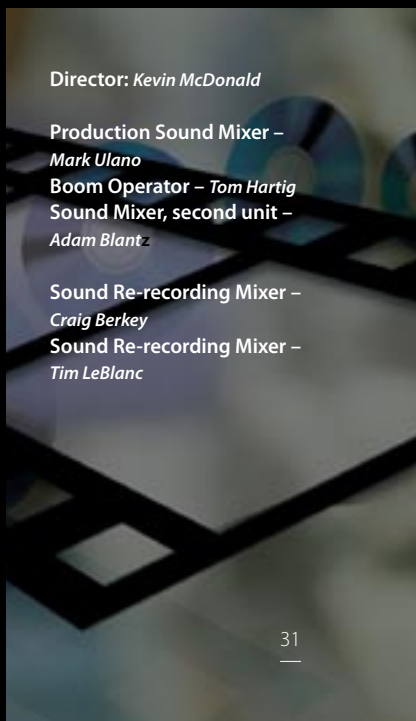
The FOH is a stock Backstage Jr 36" cart, and on it is an SKB 10 space rack on the lower shelf, antenna mast on the upper. In the rack there are Aviom modules for the other side of the snake, two Lectrosonic Venues – one upper wide band and the other lower wide band. There are two ComTek BST50b base stations, one for public monitoring and the other for private monitoring by the sound department/boom operators. There's also an Aphex audio DA for Video assist/EPK and so on.

The FOH cart is also powered by another ProSine auto switching inverter, and there is another MacMini on the FOH for networking with the main cart. This is useful for running Lectrosonics' LecNet2 application over Apple Remote Desktop for remote monitoring and control of the Venue receivers from the main cart. It also works as local terminal for the boom people to do the same from their end if they want. If I have Internet at my end, it goes to them over this network and vice versa. A single strand of CAT5e goes to the Video Assist Engineer from the FOH cart via Mux-Lab Balun, sending programme audio to his recorders and taking up to three lines of video back from him. This can be two lines of video if the client wants to hear playback in his Comteks. Then we take the video assist playback audio feed back up his Cat5e and retransmit it from the BST50b at the FOH cart.

Capital Job

Washington D.C. also went smoothly. We had a few days of prep time, scouting locations and checking in the gear. If you're ever hired to work on a show in D.C., hope that Carol Flaisher is involved – D.C.'s premier Location Manager. This was our second show working with her and her team, and they achieved miracles for access and location control for us in many sensitive locations.

Filming in Washington became an intensive, high paced logistical exercise with daily challenges for all. We worked in the Metro (commandeered our own train for a night). We filmed a major press conference scene in the Library of Congress (including quite a few real-world cameos) and had music playback for a choreographed mini ballet of Peter and the Wolf, at the Kennedy Center. We had car tow dialogue with music playback on the streets surrounding the Capital building at rush hour. An old habit of mine is to play music to the actors in car scenes as we wait or reset. Russell requested a particular song while we were doing this. Next thing we know, he decided to incorporate it into the scene and voila, Russell was singing to it live! We also had a fast moving Steadicam dialogue scene walking through a live high school marching band playing on the steps of a famous Masonic Lodge. The Director tended to prefer tiny, practical locations all over this old town, so it was a lot like shooting in New York City, always filled with creative opportunities to prove that nothing is impossible for a sound crew, if they love what they do!



Director: *Kevin McDonald*

Production Sound Mixer – *Mark Ulano*
Boom Operator – *Tom Hartig*
Sound Mixer, second unit – *Adam Blantz*

Sound Re-recording Mixer – *Craig Berkey*
Sound Re-recording Mixer – *Tim LeBlanc*

Allen & Heath XB-14

Has there ever been anything so exciting since the arrival of sliced bread? ALISTAIR MCGHEE thinks so; and it's not baked goods either.

How's this for a party game? Name all the manufacturers of mixing desks costing less than a thousand pounds/Euros/dollars/conch shells. That should keep the children amused for hours. Now how about this: name all the manufacturers of broadcast radio mixing desks under a thousand units of your local currency. Eh, uum well no, eh… give in.

Well, into this veritable maelstrom of competition, Allen & Heath has bravely pitched its new XB-14. Yes, a genuine broadcast mixing desk designed for radio at under GB£1,000. I almost wept when I heard the news. Born out of suggestions from its Israeli distributor, the XB-14 takes technology from A&H's Zed-series desks, but is a new design, as will quickly become obvious.

The desk features USB I/O for easy digital co-operation.

The Right Mix

Of course even in the tiny niche of radio there's a huge variety of opinion on what constitutes the right set of features for a mixer, and coming from a BBC background I'm acutely conscious that there are other perfectly valid ways of doing radio, it's just that I can't be bothered learning them. For me then, it came as a pleasant surprise that Phil Gott, now of Neutrik, had a deal of influence on the design. Phil and I joined the BBC on the same training course back when banking was a respectable profession and Phil owned the loudest alarm clock this side of Big Ben.

So what do you get in an XB-14? Well, four mono mic inputs, two Telco channel inputs, and four stereo faders that offer control over a selection of balanced, unbalanced, and USB return inputs. Yes USB. Plug the XB-14 into your computer (no drivers required for PC or Mac), and not only can you record your mix (with some flexibility) directly, but you can also play back from an application like Spot On or any radio cartwall software. From the input side, the presence of Telco channels is a statement of broadcast intent, but the real radio devil is in the detail and particularly in the comms and monitoring detail.

So you want to talk on the radio while operating your own mixing desk? You'll be needing an SLS (studio loudspeaker switching) relay on your mics. In this case it's a CRMS, but it really is a vital component of an on air desk. You'll want separate control of your guests and presenter headphone level, and you'll want separate monitor routing for guests and presenter. All this is provided by the XB-14. You can choose whether the guests can hear your pre-fade, which is another neat broadcast touch. In radio, dim is not just a handy epithet but also a tidy monitoring function, and the XB-14 provides a 20dB dim switch on the control room speakers.

Talking of dim, many broadcasters eschew the use of faders for mixing programmes, and rely on channel on/off switching to activate the mics at the right time having set the levels on the trims and faders. As you might have guessed, this is abhorrent to BBC-trained engineers, and the cause of much misery and confusion for manufacturers trying to satisfy everyone. Allen & Heath has taken the path of perfection and provided mutes for the channels that can be overridden by dip switches on the back panel. These switches also independently control the CUE/START signalling for remote replay, and more of that to come.

A Clean Feed

Now back to those Telco channels, just underneath the input xlr you have a male xlr carrying clean feed out. ▸

THE REVIEWER

ALISTAIR MCGHEE began audio life in hi-fi before joining the BBC as an Audio Engineer. After ten years in radio and TV, he moved to production. When BBC Choice started, he pioneered personal digital production in television. Alistair is now Assistant Editor, BBC Radio Wales, but is allowed out occasionally.

And I'm assured this is proper clean feed and not the out of phase derived nasty mix minus variety. You even get switchable cue feed to the source, either standard clean feed or an aux mix. This feature enables interviews to be conducted while the desk is on air (say while a stereo replay source is faded up) in conjunction with the pre-fade switched Aux bus. You also have talkback to clean feed, which is factory set to mic one input pre-fader, but can be from any mono mic input. If I was a quibbling man – and I do love a quibble – I'd like the option of a separate talk back mic, but for self op situations the implemented arrangement keeps the number of mics down to a minimum. From an operator's point of view, the Telco channels offer two extra comms channels – yum yum.

Not just an adapted common console, the XB-14 is purpose-built for broadcast.

The XB-14 offers a plethora of stereo channel options. You have four stereo faders, the first two of which are switchable between quarter-inch jack inputs and secondary inputs from phono inputs. Like all the channels, they feature an individually selected pre or post aux send and a Mix B bus send. The large 'On' switch not only operates the channel mute (with the proviso listed above) but also functions as a remote start button. In what can only be described as a cunning plan, there are seven remotes available across the four faders, one for each input including the secondary inputs.

There's also remote switching for studio live lights and loud speaker muting, along with remote inputs for muting the mic channels. And last but not least, connectivity to external metering, so you can plug up your PPMs and mix in good old-fashioned PPM 6 world.

All By Itself

I think it should be obvious by now that the XB-14 is not a slightly customised Zed-series hastily thrown together to makes some quick cash. On the contrary, it is a thoroughly well designed product that has wrestled with the real challenges of making radio programmes and has come up with a genuine radio friendly solution. Of course, nothing is perfect and probably the most significant omission is the lack of a compressor. In the studio that probably won't matter, as signal processing no longer has to be expensive. On the road, every extra box draws the spectre of the back clinic just a little bit closer, and is about as welcome as a visit from the Inquisition, or worse – HMC&E.

Having quibbled though, and with the proviso that I haven't got one to play with, I can only say that the arrival of the XB-14 is more welcome than sliced bread. In fact, in an effort to contain my excitement, I have gone back to un-sliced since its announcement. More power to Allen & Heath; we in radio land salute you.

INFORMATION

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Monkey Puzzle House

To The Manor Barn

JONATHAN MILLER dons his wellies for a trip out into the Suffolk countryside to pay a visit to Monkey Puzzle House, a keenly priced residential recording studio of much merit.

'Monkey Puzzle House is a new, purpose-built residential recording studio. We have created a studio that encapsulates all that is – or was – good about the classic studios, ironed out their faults using modern means, and added essential new technologies, thereby creating an affordable, cutting-edge facility.' That's what the website says, anyway. Of special interest is the studio's very reasonable quoted daily hire rate of £250 (including an engineer) – especially when one sees what gear one gets access to within its scenic surroundings.

Long And Winding Road

Situated on a rural crossroads on the outskirts of the quaint Suffolk village of Woolpit, an initially unassuming Victorian flint-fronted cottage fronts an adjoining dark wood-clad barn that is also typical of the area's architectural vernacular – the Monkey Puzzle House residential studio itself.

Monkey Puzzle House is also home to studio owner Rupert Matthews, an affable and relatively young individual who clearly lives and breathes his craft, having bravely put his money where his heart is.

Step through a side entrance from a gravelled courtyard and one immediately finds oneself in an expansive country-style kitchen – the hub of Monkey Puzzle House, with doors leading directly to the beautiful control room centred around a recently installed Solid State Logic AWS 900+ Analogue Workstation System and attached to an eye-catching and spacious live room.

Mathews starts here: "The last studio I built – as part of a multimedia business in a leased farm property down in Surrey – had doors that went from the control room through into the live room, which I never really liked. Another studio I worked in... was the same, as was Ridge Farm, so, here, to draw people out of the control room, the process of walking into the live room gets people trapped in the kitchen; they're still involved in what's going on, or feel they're listening comfortably, but it certainly makes the control room space feel a lot bigger for a room that's not actually huge, even though it's a comfortable room to have a bunch of people hanging around in. Besides, not having the stereotypical sofa behind the desk means there's not always someone behind you, so you don't have to turn around every few seconds to hear what they're saying.

"By putting the sofa in front of the desk you can kind of see what they're saying without having to change what you're doing too much. So the kitchen really helps – something I haven't seen anywhere else; it just seemed the right thing to do, so I went with it."

Just Have A Little Patience

Matthews' interest in recording dates back to his Sussex-based childhood: "…through having played in bands, and being the person that always brought along the tape deck and Dictaphone to the session, putting it in the corner, and working out that hiding it under blankets and things somehow made it sound better!"

Such experimentation soon had Matthews hooked, quickly moving onwards and upwards in the recording world, courtesy of an unspecified two-track Ferrograph tape machine, before settling on an audio-cassette-based four-track upon which he started recording local bands: "That was going pretty well; then, at the beginning of the '90s, I borrowed some money from my folks and bought an ADAT, eight microphones, and a tiny little mixer – not an incredible choice of equipment, but I started charging people for a recording."

Matthews' much-needed break came soon after: "When I was at college – I would have been 16 at the time – I was recording a band on my own equipment, doing Led Zeppelin covers, which I was really excited about, just on the basis of them being a bloody great band who had always recorded well. I was struggling a bit with the drums, trying to make them sound really good. ▸

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A friend took me round to meet a producer, who was a friend of his. We went into his studio, which was quite impressive, and he said, simply, 'What do you want?' I said, "Well, we're covering these Led Zeppelin tracks, doing the drums; they're sounding a bit crap, and I'm trying to make them sound more like the original.' And he said, 'Well, what Zeppelin tracks are you doing?' I said, 'Since I've Been Loving You.' And he said, 'Well, I'll tell you how the drums were done, because I did that!' And I immediately knew who he was: Glyn Johns!"

The seasoned musician, recording engineer, and record producer, famed for working with the likes of Bob Dylan, The Beatles, The Rolling Stones, The Eagles, Eric Clapton, and Led Zeppelin must have been impressed by the cocky teen standing there before him, subsequently taking him under his wing to teach him the recording ropes in a way that no music technology course ever could.

Matthews' stock rapidly rose as a direct result, as he readily admits: "...I become desirable merely by association, working at least half a month, initially, then solidly on projects that I was being employed on."

Next stop, London: "I took a job at Nomis Studios... it was an important insight into people's personalities, and how to get on with people...

"During that whole period I was still racing around everywhere, finding out what I liked and didn't like – and saving as well. I bought a house down in Sussex. It took me three years to pay off the mortgage – which is a major reason as to why I'm here now."

Home Is Where The Art Is

Matthews then decided to go it alone and cast his potential property net far and wide – from northern France right up to Scotland – before finally settling in Suffolk: "My patience had started to run out, then I saw this place; it had a load of barns at the back, which, I thought, had a good shape to them, so I got pretty much all the local architects to come round and have a look. I chose the one I thought was most exciting – before I even bought the place, but they all said the same thing: knock down the original barns, because the building cost to renovate what was there would be very similar to what it would be to knock it down and start again.

"So I bought this place right at the end of 2000, then had a hell of a struggle getting planning permission, because it's a very small community here; when it went to committee, the main objection was that there was no bus stop nearby, so how on earth would people get to and from the studio? Obviously there was a severe lack of understanding about what the studio would actually be!"

Objections duly dealt with, a planned one-year build stretched out over seven long years. "The building got bigger, the budget went out of the window," says Matthews. "And my nice little nest egg turned into a remortgaging nightmare as I had a lot of bad luck with the builders."

For all the pain though, it's a lovely place – from an aesthetic, ergonomic, and, of course, sonic standpoint: "As far as the design goes, I had my favourite places – Glyn's own studio I really had an affection for, and Ridge Farm, but

one name that was prominent through all of that was Keith Slaughter, who designed Abbey Road, the original Olympic, Air, Ridge Farm, and more. He's retired, but I went to see him, presented him with some drawings; he said they were okay, though his main contribution was saying that the height of the control room was too high – in his opinion, even though I'd taken Ridge Farm and Glyn's studio and kind of meshed them together. But Keith came up with the suspended curved ceiling idea, which we followed through."

Not that Matthews wasn't working during this unintentionally drawn-out, costly construction process, mind you: "I had a big console – a Soundcraft 3200 – here in my living room, which was acting as a control room, while I recorded drums that I could hear through the floor. ...I still had people coming and spending serious money, but one of the projects I did was more of a pop album, which didn't even get released after a top ten and two top 20 hit singles. This highlighted to me the changing face of the music industry during the crap years between when I started building this studio until it was finished."

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Early Doors

In reality, commercial recording studios are never wholly finished, but Matthews could be forgiven for wanting to get going. All it took was a little outside intervention – mixing former Fame Academy winner David Sneddon at the end of 2006, as it happened. "I was in the hardware department of Jewsons when they called," notes a still smiling Matthews. "The live room was still a carcass at that stage, and they brought their own Pro Tools rig, because we didn't have one at the time, but that's what made me go and get the Genelec 1038Bs when I did – quite prematurely. They did a white noise test that was specifically calibrated for the Genelecs, and we had an unprecedented response for the monitoring.

"So we did David's stuff, which was good fun, and then the following year we kind of opened the doors, as it were, but nothing formal to advertise the fact that we had started – just a couple of bookings from people, saying that they wanted to come and work here."

Over time, plans for the studio had necessarily changed, from being purely personal to commercial, and incorporating residential accommodation: "I already had two twin rooms upstairs at one end of the studio, in order that the people I was working with had somewhere to sleep when they came to stay, but now what's happened is that people who are booking for four weeks or longer are asking for their own individual rooms... They want a double bed so their wife can come with them, and so on; that's something I didn't really think about because I was never going to run this studio commercially."

Finally Making It

Super-successful independent Brit prog-rockers Porcupine Tree had just left the building (at time of writing) – satisfyingly satisfied, too. And the Porcupines aren't the only 'residing' notable names to sing Monkey House Puzzle's praises: "One of the last sessions that we did here was the Whybirds with Elliot Mazor; it was good to have him come over here from America and choose this studio, because he's a really prestigious producer, and he really loved the place – the acoustics, and the whole working environment. He has vowed to come back, which, bearing in mind that he built Neil Young's studio in northern California and has his own studio in New York, is quite special."

High praise indeed; success can, of course, breed success, as Matthews knows only too well. Fortunately for him, Monkey Puzzle House is on a roll of sorts: "We've been at 100% since August last year – that's weekends as well, bar a week off at Christmas; then there's a charge for accommodation as well, so it's not bad – not making a dent in my mortgage, but only because I never finished the building off, plus a few other things that I'm trying to invest in as well. I was going to run everything through tape, but the money is just not there. I've got staircases stuffed with two-inch tapes underneath them with the prospect of using it again, but I don't even have a two-inch tape machine here! It's going to be an acquisition soon, because, hopefully, the budgets are becoming a bit more proportionate to the rest of the facilities that are here."

Ironically, maybe Matthews' Monkey Puzzle House might ultimately benefit from the demise of those classic studios of yesteryear and beyond: "The big studios closing is a massive shame, and the main change for us would be that we might be able to nudge the rates up a little... It's quite sad, really, but it's just an indication of the budgets that are out there – the revenue that's being generated by the whole swing round from a tour being there to promote a record, to a record existing as a non-profit-making medium to promote a tour, which doesn't bode well. But you've still got to record it; you're just going to try and do it proportionately to what your takings are going to be."

For now, though, Matthews and Monkey Puzzle House engineer extraordinaire Tom Peters – Matthews' reliable right-hand man since 2004, before the studio building even existed – clearly have their work cut out.

INFORMATION

Monkey Puzzle House
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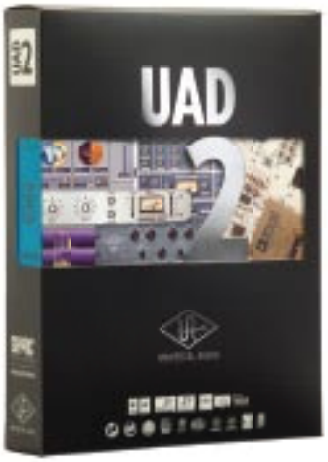
Universal Audio UAD-2

The full potential of Universal Audio's UAD-2 card has been realised with the release of its latest software; ALAN BRANCH wades through deep waters to plunge the depths of the little card's capabilities.

Unless you've been in a studio on the moon or you've just picked up this copy of *Audio Media* while you're in the doctor's waiting room, you'll have heard of Universal Audio. A company with a history synonymous with classic vintage audio processors, for some time now it has also been forging ahead as one of the leaders in DSP-based audio software, turning classic audio hardware into affordable and performance-enhancing software versions of the real thing. One of the latest developments from UA is its UAD-2 card, which comes in three guises: the SOLO, DUO, and the QUAD, which offer 2.5x, 5x, and 10x the performance of the original UAD-1 card respectively.



"...only with the release of its 5.2 software has its full potential really been realised, especially for Pro Tools users."

The Waiting Game

Well, to be honest, the UAD-2 is not that brand spanking new now as it was released last year, but it was only with the release of its 5.2 software that its full potential was realised, especially for Pro Tools users. At the time of writing, the latest version is actually 5.3. If like me you have existing projects running on the original UAD-1 card, then the smooth transition of adding a UAD-2 card is extremely important, and throughout the introduction of the UAD-2, software has supported the combination of the older UAD-1 card alongside the newer UAD-2, beginning with porting the majority of all plug-ins to run on the new 'SHARC' chip fuelled DSP card. It was a huge undertaking by UA to conform existing code of each plug-in to use a different DSP processor, which is why it wasn't until version 5.2 of the software that all of the plug-ins were finished. This was one of my personal reasons for holding back on fitting this upgrade, one of those 'let's wait till the dust has settled' installations, which in most cases of new software is the best course of action.

Support for all major formats including RTAS, AU, and VST are now in place. Up until the 5.2 release, there hasn't been support for Pro Tools, but now that it's here it seems the wait was worth it. It includes Mellowmuse ATA – an automatic delay compensation plug-in for Pro Tools LE and MP users. Mellowmuse is free for all UAD-2 users, and UAD-1 users can purchase it at a reduced price. As I said earlier, all plug-ins are now UAD-2 compatible so will work on either card (apart from the guitar amp sim 'Nigel', which for legal reasons cannot be transferred; and the Cooper Time Cube MkII which is the first 'UAD-2 only' plug-in), and they even found time to add a few new plug-ins such as the Harrison 32C EQ and the Little Labs IBP (In-Between-Phase) alignment tool. The latest 5.3 release also brings the UAD 4K Channel Strip and Buss Compressor (both of which are UA's own emulations of the SSL 4000 console).

Under The Hood

The UAD-1 was based on the Mpact media Processor; the UAD-2 has a new DSP engine using the 21369 SHARC analogue devices chip, a popular and proven family of processors with extreme floating point performance (this means more plug-ins for you and me). While the original Mpact processor was great for UAD to get the first card off the ground, it wouldn't be long before more power and flexibility was going to be needed – let's face it, who doesn't want more processing power? UA has been developing the UAD-2 for several years, which has now launched with a huge improvement in power over the original UAD-1. It has features such as low-level cross platform support so OSX Tiger/Leopard and PC Win XP/Vista are all covered, optimisation for multi-core processors from Intel and G5, including multi-thread 64-bit OS systems. The UAD-2 has updateable firmware and smart DSP management with reduced overall bus latency and zero-latency (LiveTrack – discussed later) modes. That sounds like a nice slam dunk of fuel to the mixing system, especially when it's possible to pimp your system to take up to four Quad UAD-2s and four UAD-1s if you have the available slots. That's a mega powerhouse of a ▸

THE REVIEWER

ALAN BRANCH is a freelance engineer/producer and ex-member of the On U Sound Crew. His long list of credits includes Jamiroquai, Beverley Knight, M People, Simply Red, Depeche Mode, Shed 7, Sinead O'Connor, Bjork, and Sade. www.alanbranch.com

machine, offering 44 times the power of a UAD-1 card!

Installing

The UAD-2 cards are PCI-express and should fit any compatible Mac or PC motherboard, although a good read of recommended systems on the UA website is advised, especially if fitting multiple cards, as these can draw more power, and those with cheaper PCs might not have a big enough power supply to provide enough to keep the cards running smoothly.

Easy to follow instructions are included within the ever-increasing-in-size packaging with all the software needed, but as ever it's always best to check for a new software version direct with the manufacturer website. A quick download later and the software was in, an important point being here not to charge in like most do and ignore the large lettered 'Read me First' booklet. The software has to be installed first. Fitting was a synch in my 8-core Mac, alongside my existing two UAD-1 cards.

The 4K Buss Compressor.

NEW PLUG-INS

Some of the new plug-in releases from UAD are the Harrison 32C EQ and the Little Labs IBP (In-Between-Phase) alignment tool. The Harrison 32C was made in conjunction with the Harrison Consoles LTD and Producer /Engineer Bruce Swedien, famed for one of the best selling albums of all time, *Thriller* by Michael Jackson. The 32C plug-in was modelled on his personal 3232c Series Harrison console, recreating the console's four overlapping Parametric bands, each with fully sweepable gain and frequency controls, but without the usual Q or width control, as special circuitry was developed by Harrison to automatically adjust the effective bandwidth, a kind of no-brainer for EQ, as you dial in more amplitude the sharper it gets. I found it very different to other types of EQ, and certainly gives it a unique character to shaping sound. Hi and Low pass filters as well as a switchable low band shelf/peak enable a versatile and smooth operation for fitting audio into a mix; while there are added power, gain, and phase reverse switches for extra control. For the less bothered by exact emulation is an SE version developed by UA for higher plug-in counts.

Booting my Mac brought the new UAD Meter and Control Panel software to life, the meter showing both UAD-1 and UAD-2 cards' usage at a glance with a big blue bypass button for each card, program memory, and DSP usage meters. The UAD-2 card has program memory as well as RAM memory for certain plug-ins, so it's easy to see at a glance how close to the overload edge you are. Note that the UAD-2 has enhanced load balancing routines so it uses maximum usage of available DSP in multi-card systems, unlike the UAD-1 which will always load the next plug-in into the card with most space.

The control panel is a separate window with tabbed pages of detailed system information and configuration of installed cards and plug-ins. Here I could see all the plug-ins and the authorisation status, a bit like the Powercore Plug-in window, but clearer. Each plug-in can be activated for use on a demo period of 14 days or bought via a direct link to their online store. The new UAD-2 software means all my existing plug-ins had to be re-authorised to run on the UAD-2. But this is free, and a very simple affair as a big authorise plugs button is provided which links direct to your online UAD account and downloads a new authorisation file. Strangely, you have to drag the downloaded authorisation file to the control panel in the dock. This fooled me at first, as I was dragging it to the control panel itself, which I would have thought to be more logical. The control panel also has Help and Support links for each plug-in, manuals, online help, etc, as well as more detailed system usage showing a graphical image of each card, while the configuration window is there with various parameter settings than can be tweaked for each specific host program, e.g. Logic, Cubase, etc. Note there is now a new window for Pro Tools users to set buffer settings.

Plug-ins

As each program uses plug-ins differently – notably Logic has a process that releases plug-ins when not in use, which is fantastic for saving power, but a bit of a headache for DSP systems, hence why some UAD-1 card owners had issues with clicks, especially with the 8-core Mac Pro. Fortunately I never had this issue, and UA seems to have a good support team at hand to help with

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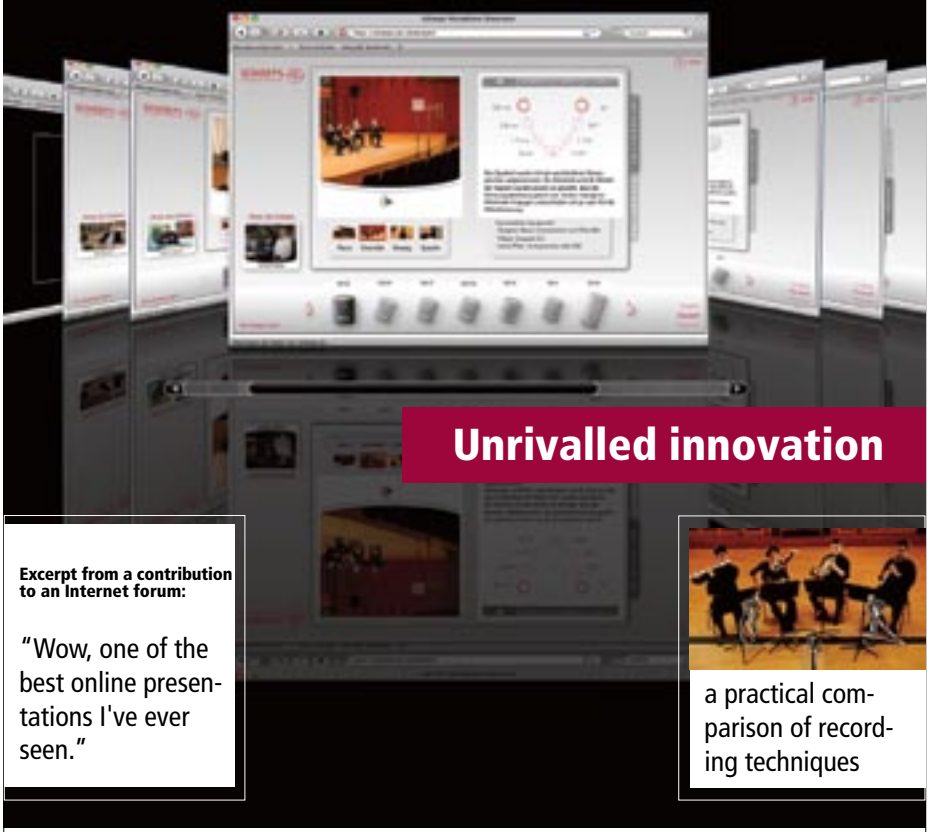
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The Harrison 32C EQ, a new plug-in from UA.

problems. It's worth noting here that the UAD-2 plug-ins remain loaded even when dynamically bypassed by the host. There is, however, a switch to force it to release DSP for this auto switching, but it will increase the chance of clicks. There is some variation in the relative DSP usage when UAD-2 is compared to UAD-1, so while UA says of the Solo '2.5 times the power of UAD-1', there are some that exceed that, and some that don't. For example, the UAD-1 can load four mono versions of the new Harrison 32c EQ, while the UAD-2 Solo can hold 18! On the other hand, a stereo Realverb Pro can be loaded eight times on UAD-1, and nine times on a UAD-2 Solo. A very big chart with all the comparisons up to UAD-2 Quad is available at www.uaudio.com/support/uad/charts.html.

There is obviously a difference in the plug-ins as each one has been specifically coded for each card, as such a plug-in won't run on both cards at the same time. You can, however, choose which card it will run on via the tabbed control panel. I can't really see people going back and forth switching plug-ins, unless they can be bothered to really maximise the space. This is a major drawback to running both types of cards, but after some experimenting I found because of the difference in performance of some plug-ins, it was no real advantage running them on the UAD-2 and set plug-ins like the Dreamverb Pro, the Roland RE-201, Plate 140, and the Dreamverb to always load onto the UAD-1. So for these reasons you can see why it might be good to swap all your existing cards to UAD-2, offering more power and ease of use, but on the other hand, if you regularly use some of the plug-ins with a more or less equal count then it's worth running both.

> "A new feature on the UAD-2 is the LiveTrack switch for each plug-in. This is a feature to help with recording in real-time by circumventing the normal latency."

LiveTrack

A new feature on the UAD-2 is the LiveTrack switch for each plug-in. This is a feature to help with recording in real-time by circumventing the normal latency. 'Fantastic', you might say, 'I'll use it all the time'. Well, it does come at a price, which is that the CPU usage is dramatically increased. However, a small price to pay when you can dial up a recording channel, load in a Fairchild, Cambridge EQ, and a Plate 140, and press 'record' with no noticeable delay.

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LITTLE LABS IBP (IN-BETWEEN PHASE)

A fantastic emulation of a very useful engineer's phase alignment tool, designed initially to help get rid of the unwanted comb filtering sound when combining signals with phase problems. Basically this means the kind of hollow effect when microphones pickup patterns cross paths like multi mics on acoustic guitar or toms, amps, etc. It can also be clearly heard on vocals when problems arise through tracking, and often difficult to get rid of with a simple phase reverse. This little tool has a variable phase dial from 0-180 degrees, switchable to 0-90 degrees, enabling you to listen and adjust the phase of the audio until you get just the right sweet spot, as well as low/hi-switch for adjusting the frequency centre. With a small play of these functions it can really save audio that has phase problems affecting the sound. Added extras are a standard phase invert, a fine delay adjustment as well as delay bypass, and the finishing touch for any hardware emulation – a power switch (if you get bored of pressing the bypass button). Not limited to being a fixing tool phase can be a fantastic effect easily created by adjustment of the delay and phase adjustment. UA has a great little (excuse the pun) video showing how well this works. www.uaudio.com/webzine/2008/december/power.html

In Use

Certainly the UAD-2 brings long-awaited relief for those, like me, that love using the UAD plug-ins. Its huge jump in power and optimisation really make a difference when running multiple instances of the same plug-in, e.g., on an average mix I could easily eat up the DSP on the UAD-1 with only eight 1176 plug-ins, whereas now I have much more flexibility thanks to having the power

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to run 21 mono versions of the same, and that just with the smallest Solo card. If only I could have gotten to test the Quad! The plug-ins seem to recall identically no matter what card I run them from, and projects saved with UAD-1 opened fine running from the new card.

There is a limit when running a system with low latency, as the load on the card is relative to the system load. As there has to be some latency for high plug-in counts, the best practice is to keep low latency sessions for recording and change to high buffers when mixing, and hopefully you shouldn't run into problems with clicks. The inclusion of RTAS really launches the card with every option now and opens the door for PT users, especially for LE users; and the inclusion of the free Mellowmuse ATA delay compensation plug-in, a feature not included with this host, probably makes the UAD-2 card a no.1 purchase for LE/MP users. But even for PT users, its extra power would be a great boost. Ever since I started mixing on a native system running a dual Quad core Mac Pro, it seems almost weird when mixing on an average PT system, having to wait for plug-ins to load or running out of power. But with either system – host native (Logic, Cubase LE, etc) or DSP-based (Pro Tools) – it's not just the extra power, it's the quality of the plug-ins that UA brings to the table. There are way too many to mention here, but personally the Fairchild is one of the best versions of this classic hardware, as is the Plate 140; whilst the Roland RE-201 and the Dimension D aren't emulated by many other manufacturers that I know. Add to this the Precision Bus compressor, LA2A Compressor, Neve, Pultec, and now Harrison EQ, it's an engineer's delight to have these tools at hand.

UAD-2's 4K Channel Strip

> "...the Little Lab's IBP is the best plug-in I have seen in a while, offering simple fixing options for phase alignment, restoring tone and colour with multiple audio tracks, as well as creating phase effects."

Conclusion

Testing this UAD-2 Solo card in conjunction with the existing UAD-1 card worked really well, and whilst my initial thought was to replace them with more UAD-2 cards, I am going to keep them for the time being as both can offer great plug-in counts, as the UAD-1 still makes use of the few plugs not increased that much by the power of the UAD-2. But that's one of the great things about the system: it's so flexible, you can expand it at any time with no major change to your existing songs when it does come time to replace the older cards or add a plug-in. Not only does the UAD-2 come in different power sized cards, but also with optional extra plug-in bundles, so there are a lot of options to meet different budgets. Add to this the growing plug-in family: the new Harrison EQ plug-in offers yet more choice for vintage lovers, as does the new UAD 4K, offering quite different sound and shaping tools, whilst the Little Lab's IBP is the best plug-in I have seen in a while, offering simple fixing options for phase alignment, restoring tone and colour with multiple audio tracks, as well as creating phase effects. The UAD-2 card offers a great solution for those looking for quality audio processing with the added bonus of extra power, ease of use and setup. Whether an existing user looking to upgrade or complement existing systems, or new to the whole UAD experience, you'll seen see why Universal Audio is one of the most respected audio companies around.

INFORMATION

Ⓕ **Prices from GB£425.22 (UAD-2 Solo) – GB£3,416.52 (UAD-2 Quad Omni) (all prices exc.VAT)**

Ⓦ **www.uaudio.com/promo (Get up to US$500 free plug-ins with your UAD-2 purchase until the end of June 2009)**

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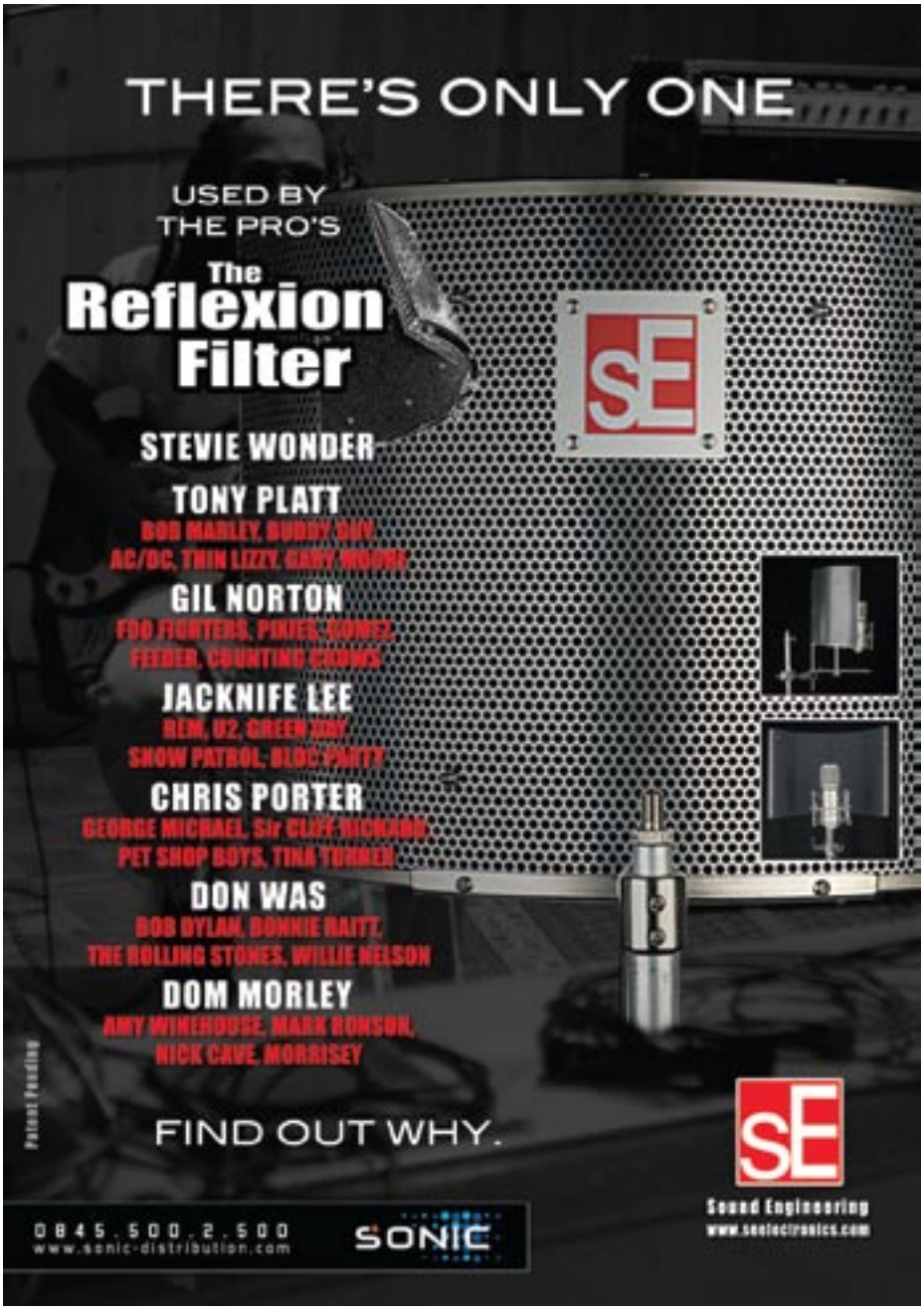

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Milk studios

Music Maker

Milk Studios Set For Long Life

According to Tom Aitkenhead, it's the music that matters; and few could disagree. PAUL HOLMES uncovers both musicality and a market-savvy approach at the recently opened Milk Studios.

There will always be people who want to make music, and there will always be people consider life less rich without it. Tom Aitkenhead's Milk Studios in London's East End is covering both the creative imperative and the fiscal pressure by ensuring that both established and unsigned acts can afford time in the studio to project their music to the masses.

Aitkenhead has played in many bands, and in his current role as producer and engineer he still contributes to many of the mixes he works on. His musical background gave him valuable insight into how bands work, and planted the seed that would later lead him to a full-time career in producing and engineering. His first step was a joint venture with the owner of a studio space in Bermondsey who shared similar aspirations. Aitkenhead provided the equipment and the two of them shared the set-up for half a week each. The experience quickly turned hobby into career, and it wasn't long before he founded Oilville Studios where he produced the first Ben and Jason album, Hello. That was about fourteen years ago, and his new studio on London's Commercial Road, custom built for his requirements, distils his experiences both in front of and behind the glass.

> "My concern is with the signal paths going in, the converters, the mic pres, the microphone, the mic placement… my interest is in how to capture something."

Spatial Awareness

Acoustically, Milk Studios is a big step up from what Aitkenhead describes as the 'grotty' yet character-full Oilville. He scoured suitable venues for three months before finding an empty warehouse that suited his specs. After pacing out the general dimensions and laying down the square footage with gaffer tape, he proceeded to build his vision from scratch. With some major architectural adjustments, the result reflects Aitkenhead's intimate appreciation of band dynamics and interaction, with a strong respect for the lines of sight essential for supporting group performances during live recording sessions.

The studio itself consists of a 22x16 ft live room, a 16x15 ft control room, and an 8x6 ft vocal booth, all treated by Primacoustic. As well as adding an aesthetically professional feel to the studio, which had suffered from a slightly clinical, sterile finish, Aitkenhead enthused about how efficiently the Primacoustic installation improved the overall acoustics. Not desiring a totally dead sound from the rooms, he wanted to exact a balance between generating some life while maintaining a degree of neutrality. Aware of the exorbitant construction fees required to incorporate odd angles into a studio, the design philosophy demonstrates a realistic approach to cost per square foot and expected revenue. And he's delighted with the result. Unable to hold himself back, he'd set up a drum kit in the still untreated live room during the studio's early development. After a host of musician friends had come over for a bash, he admitted to being a little disappointed with some detrimental flutter echoes and reflections. Once the space had been treated with Primacoustic products however, he noted that, "…in exactly the same room, with exactly the same drum kit, after the installation, it was literally transformed."

With the studio design sorted, Aitkenhead was able to focus on producing and engineering. His approach is far from a dogmatic one, with a philosophy that unites artist and producer as joint-collaborators in the overall sound. He avoids tarnishing the diverse spectrum of musicians he encounters with a 'signature sound,' preferring instead to focus on bringing out individual personalities. His young, hip, and trendy list of predominantly Indie artists reflects his musical background, while his choice of gear blends classic analogue and modern digital technology. Aitkenhead relates, "My concern is with the signal paths going in, the converters, the mic pres, the microphone, the mic placement… my interest is in how to capture something."

His search has led him to Focusrite mic preamps, particularly the ISAs, which he favours for their impressive ability to record harmonically complex signals with detail and warmth whilst imbuing a musical quality.

All Plugged Up

Simply ensuring that he captures the nuances of performance is not the end of the story though, and the generous array of plug-ins that augments his Pro Tools HD3 set up reflects this. Aitkenhead's particular favourites include Bomb Factory's 1176 compressor, Pulltech EQs, Waves UltraVerb, and the Waves Renaissance bundle. ▸

A favourite technique is to employ subtle overdrive on synths or keyboards, using Mooger Fooger delay or Blue Tubes Analog Valve Driver ADR2S, to give them more presence in the mix. He explains, "…with digital, if you add a little bit of overdrive to a few things here and there, suddenly it just takes on a more analogue, 3D quality." It's his understanding of a mix's analogue potential that informs his digital direction.

It is this respect for the infinite permutations of tools at his disposal that ensures Aitkenhead never gets bored. There are sessions where he admits to not being particularly engaged musically, but often this distance can generate positive results. He values artistic objectivity very highly, and recognises the need to listen with the ears of a consumer – who doesn't care how long it took to get the drums sounding crisp, exciting, and defined; or the guitar to sound bright and full. He expands: "You get emotionally tied to things you work on. You do some clever thing with a piece of bass delay that took you an hour and a half to set up… I think the secret is turning up the next morning, pressing 'play', and realising, 'it may be clever but actually it's not enhancing the song.'"

Being creative with equipment means Aitkenhead can maintain interest by focusing on the elements within a track that grab his attention. "It may well be that I don't think the song is particularly special, but there will tend to be, in most bands, an element or thing that engages or excites you." Working out how to squeeze the best from every element is the challenge, and each project contributes to the endless learning curve that makes the job so fulfilling.

Band-In-A-Box

Once the rockstar-dust has finally settled in the live room, the mixing/mastering process begins. He doesn't own a console as such – all the mixing's done in the box – and while he appreciates the psychological thrust the sight of a desk can inspire in clients, his question is whether or not this approach would give him options creatively that his current set-up can't fulfill. Presently, he doesn't see the need, "Control surfaces don't change the audio, my obsession is with the sound of stuff," he observes. It's this obsession that drives his perspectives on the important interplay between different sonic elements that ultimately define the mix-down. A key aspect is early incorporation of vocals. After perfecting the rhythm and bass parts, he may bring the vocal in to ensure it gets the space it deserves right from the start. "I used to get to a point where I'd make the instrumental sound pretty good and then realise I hadn't generated space or a place for the vocal." Putting vocals in earlier solved this problem, and also instantly augmented the various counter-point melodies from accompanying instruments once they were introduced. He also appreciates the flexibility an early assessment of the mix can provide: "I'm quite a big fan of getting the mix to work early on so that you can then actually have fun with it, you can start playing with treatments, you can start looking at things that may or may not be exciting." Influential ideas that could dramatically change the approach towards the total sound are therefore much easier to incorporate than if they were only realised at the end of the process.

His current work involves mixes for an artist called Statik, an ex-DJ from the Grime music genre who is working on collaborations with Indie artists such as Pete Doherty, Coco Sumner, and Fyfe from the Guillemots. A steady stream of clients, almost all from word of mouth (Aitkenhead has only advertised in NME about three times during his career), justifies his decision fourteen years ago to go pro. He attributes his success to changes in approaches towards recording artists. He explains, "I think I'm at the right end of a market that's now radically changed. You can make a great sounding releasable album for ten grand now... Maybe less."

Aitkenhead still loves to go and see live bands and this ensures that, while he still receives work from record companies, he is also free to sound out new, unsigned talent that can benefit from his studio expertise. And he's delighted that there is still a tangible thirst and passion for creating music that means there'll always be a need for recording studios like his.

INFORMATION

Milk Studios
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Symbolic Sound Kyma Pacarana

What's small, furry, and makes exotic noises? RICHARD WENTK discovers that two out of three isn't bad.

Symbolic Sound's Kyma has been the sound industry's secret weapon for nearly two decades, clocking up credits on films like *Wall-E, The Dark Knight* and *Finding Nemo,* and collecting users like Ben Burtt and producer/DJ BT. In 1990, Designers Kurt Hebel and Carla Scaletti joined forces to create a sound processor that ran on the – then – latest generation of DSP hardware. The result was Capybara, a rack-mounted monster that could be expanded with extra DSP cards. As Moore's law crept ever onwards, it became possible to pack more power into a smaller box. Kyma Pacarana is the latest iteration of this process. Like previous Kyma expanders, it's named after an unlikely and exotic rodent. But unlike most rodents, it's packed with DSP power, equivalent to 150% of a fully loaded Capybara, at a much lower price. It's also small enough to be packed as airport carry-on.

So how does Kyma work in practice? Installation is frankly eccentric, and consists of copying files by hand from the CD to an installation directory and also selecting drivers by hand. Connection between Pacarana and your host computer is via F800. But both F800 and F400/800 cables are in the box, so any F400 interface can be used. Once installation is completed, Pacarana boots. One minor nitpick is that you have to touch the panel, which makes it difficult to park out of sight. The processor box runs quite hot and needs good ventilation. Noise when idling isn't too distracting, but the fans become more obvious when running at full tilt.

> "There's a shock factor involved in realising how unadventurous most of your experience with audio has been, and a challenging acclimatisation process as you get used to thinking outside of the usual boxes."

The older Capybara processor included its own audio I/O, but Pacarana doesn't. Kyma can't run inside a VST, RTAS, or AU wrapper, so it has to be connected to a separate interface using its own USB or FireWire ports. Effectively it becomes a separate piece of digital outboard with AES/EBU or S/PDIF connections. Analogue connections will work too, as a last resort. Similarly, if you want to use a keyboard, it has to be plugged in to the MIDI or USB ports at the back of Pacarana – you can't use a controller already connected to your PC or Mac.

According to Symbolic Sound, AU support depends on Apple, and will become possible with the next update of OS X. VST and RTAS support are both longer term projects. While this limitation isn't a showstopper – many facilities still use outboard – it bucks the trend of the most recent wave of DSP products that are more tightly integrated and better suited for working entirely inside the box. It also means you'll need to dedicate an extra interface and/or controller exclusively for Kyma. Not all controllers are supported, but the list is growing – you can find details on the Symbolic Sound website. We had some problems getting the external interface – a TC Konnekt 24D – recognised reliably. We did eventually evolve a reliable boot sequence, but a more polished approach would be useful here.

In The Box

The Kyma software, which is updated regularly, includes a long, long list of pre-made modules and presets, an editor for what are called 'sounds' – patches – and a multi-track timeline editor which triggers sounds at certain hit-points for synchronised playback, effectively reconfiguring Kyma in real time. Sounds are built from modules linked using virtual patchcords, and you can and should build and save your own. The patching process is slightly quirky but it doesn't take long to master it. The manual, which you will need to read, is excellent – it's more of a book than a quick summary of features, and it's written in a comprehensive, jaunty, and accessible style that puts most manuals to shame.

If you've used a patchable system like Reaktor or Max/MSP, you may be wondering what makes Kyma special – aside from hardware acceleration, which offloads all of the processing onto Pacarana and frees up your processor for more usual processing. There are three obvious differences. The first is that Kyma includes a much wider range of powerful modules and techniques. All of the usual synthesis, processing, and modulation basics are included, including filters, vocoders, oscillators, reverbs, compressors, and limiters, both single channel and multi-band, various kinds of EQ, granulation, and plain old sampling. There are also various spectral display and waveform display windows – and Kyma adds spectral processing, morphing, and resynthesis. In fact, resynthesis and morphing are almost comically easy. You can analyse almost any pair of files and morph between them manually or automatically, with excellent results.

The second difference is that almost anything can be connected to almost anything else, and to a large extent modules can be peeled open to reveal their component ▸

THE REVIEWER

RICHARD WENTK is the owner of Skydancer Media, a digital production company providing sound, image, design, and consultancy services to various clients in London and the West Country.

parts and connections. It's very easy to patch MIDI note number to the centre frequency of an EQ. But this is a simple one-dimensional example, and the power of Kyma starts to become obvious once you realise that processes can modulate each other. A more powerful example would be frequency dependent ducking, using a combination of level analysis and filtering to hollow out an EQ notch around a vocal part following the vocal's level. Of course you're not limited to a single sidechain unless you want to be. And Kyma is entirely comfortable with surround with arbitrary channel counts, so it's easy to mix surround channels to create a single control signal and apply that to as many discrete channels as you want. A more creative possibility would be auto-switching between different voiced/vowel and unvoiced/consonsant FX chains in a line of dialogue. But it's also possible to do clever spectrum-wide manipulations like ducking or otherwise mutating the entire spectral curve of a voice rather than just a single EQ notch. A Kyma adept would be able to take them even further, recognising individual words from dialogue or even reassembling speech or vocals in a completely open-ended way. It doesn't take long to appreciate that the possibilities are almost limitless.

Getting Tricky With It

Many users will stop there, and either skip the next stage or dabble briefly with its basics. But each element in Kyma can be scripted using either the underlying Smalltalk computer language, or the slightly simplified CapyTalk variant. Scripting is popular in 3D animation – CGI would be impossible without it – but the firewall between audio users and software programmers has been much more strictly enforced in audio.

At least, that's the tradition – but it's not quite as true as it used to be. Some laptop users discover tools like Supercollider and Csound – both are computer programs that generate and process sound. Other users have taken to writing their own plug-ins, and found that it isn't as hard as it looks. Kyma's environment takes this kind of scripting a stage further, with a fairly painless introduction that can be extended almost indefinitely.

It's possible, and useful, to modify the action of most of the features with single-line scripts which don't do anything spectacularly clever, but are easy to adapt and customise. From there it's a relatively easy step to move towards more complex scripting. Scripting isn't as intuitive as patching boxes together and dialling up presets, but it offers almost supernatural control over audio. You can build yourself a third-octave graphic with only a few lines of text, and sweep the centre frequency of all the bands in parallel, randomly varying the frequency of each band above 1K – this can create an unusual chorus effect – or randomly varying the level.

A notorious audio marketing cliché of the 1980s promised audio products limited only by your imagination. Twenty years later, Kyma comes closer than any other product to making good on that promise. The catch is that most audio engineering and sound design happen inside a small creative space, and Kyma blows that space wide open. There's a shock factor involved in realising how unadventurous most of your experience with audio has been, and a challenging acclimatisation process as you get used to thinking outside of the usual boxes. With Kyma, processes and effects can be made smart and responsive – almost anything becomes possible, including FX that include their own automation, and can listen to audio and respond to it intelligently.

Conclusion

If you're looking for a quick-fix audio sweetener box, Kyma probably won't be for you. It doesn't promise the fattest, creamiest compression you've ever heard, or the world's most expensively silky pre-amps. But the applications for post are more obvious. Surgical sound editing becomes trivially simple, and the possibilities for creative sound design are almost endless. Kyma specialises in exactly the kinds of sounds that designers live to work on – exotic, strange, unusual, and creative. The morphing possibilities on their own are worth the asking price. Although Kyma isn't cheap compared to software-only products, it needs to be assessed at its own level, which pegs it at roughly equivalent to a box and a half of good pro outboard. At that price it's something of a bargain – but only if you're prepared to stretch your sound design work in new directions that aren't possible with any other product.

INFORMATION

Pacarana Professional US$4,402.00 (exc.tax)
Pacarana Entry-Level US$2,970.00 (exc.tax)
All systems include Kyma X software and free updates

Symbolic Sound, PO Box 2549, Champaign, IL 61825-2549, USA
+1 217 355 6273
www.symbolicsound.com
info-kyma@symbolicsound.com

DPA 5100 MOBILE SURROUND MICROPHONE

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www.dpamicrophones.com

The DPA 5100 mobile surround unit: surround-to-go in a lightweight, rugged, plug-and-play unit, complete with cables and weatherproofing.

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DPA MICROPHONES

Developer Q&A

Kristofor Mellroth, Microsoft Games Studios

With the massed customers for Xbox and PC games waiting to judge your work, it's important that Microsoft Games Studios gets the audio right. For Kristofor Mellroth that means re-assessing the developer's production cycle and its relationship with external suppliers. PAUL MAC reports.

The nature of compiling audio for games and integrating that into the game itself means that the development team has to find room both for creative thinking and supreme organisation. What starts out as a group of great ideas can quickly turn into an irretrievable, tangled splodge of parameters, loss of coherent inheritance, multiplied waste of both in-game and development resources, and – ultimately – a compromise of the product's quality.

To ease this, Kristofor Mellroth (Audio Director and Sound Design Supervisor at Microsoft Games Studios in the US) has instigated a new development 'pipeline' (production flow) that is designed to head off any possibility of a development descending into chaos. The main weakness in entirely concurrent content conception, creation, and implementation is that events, sounds, and code are being constantly introduced, modified, and re-modified, which leads to confusion. The fix is a return to basics, and an investment in better foundations.

Paper Play

Mellroth explained that everything will now start with a piece of paper. The events, the variables that are carried with those events, plus the sounds and their component parts, will be discussed, planned, and specified. Once that plan has been signed off, then you start on 'placeholder' sounds, auditioning the events, and making sure that the middleware implementation of the sound system is well organised. When they're happy with that stage, the programmers can come in and hook up the game to the audio – make the links between game events and the audio engine, complete with all the desired variables. The game can then be tested, with sounds in place.

With asset names firmed up, events connected correctly, and a well-organised hierarchy of audio objects, it's time to revisit the sound design. Sounds can now simply be created, imported, and tested in-game in a very rapid design and audition cycle – and more importantly, Sound Designers can do what they do best, without creating a new problem every time they create a new sound.

A film analogy might be that the mix is done with temp sounds in place, then the mix is handed to the sound designers to create content to fit the mix. In that context it sounds a little odd, but it suits game land perfectly because the mix is not fixed, so sounds have to adapt constantly. It's the essence of event-based working.

Mellroth's point though is that the analogy works even better when you consider the roles of the mixer and the sound designers in film production. Sound designers agonise over the details, while the mixer looks after the product as a whole. Mellroth's idea is to make the same distinction between implementation and sound design in game audio. This then opens the door to using specialists in their fields – get a car sound specialist to get car sounds and fit them to the game, for example; not the other way around. "We see outsourcing as a very big part of our future," says Mellroth, "But what we want out of an outsourcing partner is for someone to be the best at something… it's great to have a minor in something, but you should definitely have a major… The expectations for these games are just as high as movies now."

There are variations in the way Microsoft Games uses out-source partners, depending on a number of variables. In some cases it is simply commissioned sound design, but in others it can be varying degrees of both sound design and implementation. One partnership that Mellroth values as a recent and rare find is a pair of freelancers, working as a single unit: "There's one guy who's an implementation specialist and he doesn't do sound design; and the other guy is a sound designer and he doesn't do implementation… they work as a brain collective."

While there are gains to be had from more permanent staff, it would be impractical for Mellroth to hire enough sound designers to cover a project and still have them on the books during the downtime. Mellroth: "…On *Fable 2*, we had a total of probably 15 sound designers contributing to the sounds on it… I couldn't hire 15 sound designers, it would be impossible."

Learn The Language

There is still a gulf between the traditional 'linear' world and the world of game sound that is not so difficult to fix. If you want to be a viable service provider to the games industry, it's best to be fluent in the language of games, and in the tools that dominate the developer desktops. One straightforward route in is through familiarity with middleware – it teaches the underlying structures and challenges faced by developers. Mellroth agrees: "It's definitely something we look for, and there are actually very few people out there, having just done this search, who are sufficiently proficient with middleware tools that we could just let them run wild on a project."

START PLAYING

The two main third-party middleware products are currently FMOD from Firelight Technologies (www.fmod.org) and Wwise from audiokinetic (www.audiokinetic.com). Both companies have free downloads of the core software and freely available sample material to start working with, so there's no excuse for not engaging with games audio. You may even find them inspiring as a useful new way to approach more general sound design tasks.

Firelight Technologies' FMOD Designer.

The main Wwise components, Wwise, Wwise Motion, and Wwise SoundSeed are available on an evaluation basis for free, for PC, from the audiokinetic site, as well as the example games AK Cube and Zorsis, and example projects. The audiokinetic video tutorials are particularly enlightening - definitely recommended viewing if you're interesting in games audio.

Audiokinetics' Wwise application.

The main FMOD application is FMOD Designer (authoring) with FMOD Sandbox (audition tool), available as a free download for a variety of platforms, as well as extras including tutorial files and Designer example material. An example iPhone game is scheduled for release as part of the FMOD education materials, in June.

Both packages can be used for free as long as you're not using them on 'commercial' or 'for profit' projects. Please see the licensing and sales information for each on their respective websites.

What may not be well known in the mainstream pro-audio community is that there are a couple of dominant third-party middleware tools that you can download and use for free on a non-commercial basis, simply as an educational experience and thus another stamp in the game audio passport. The current frontrunners are Audiokinetic's Wwise, and Firelight Technologies' FMOD – see the 'Start Playing' box for more specific details.

In essence, audio middleware is an interface to game events – a way of managing sounds and the way sounds react to game event variables in a friendly manner that isolates the content from the realities of code. The bit that connects a middleware project to the game is the Application Programming Interface (API) – a set of objects that give the game programmer convenient ways to talk to the middleware, and hence take advantage of the sound designer's hard work.

Mellroth estimates that about 50 percent of games developers use third-party middleware for their audio design, while the others use in-house tools. The choice depends on resources, the project in hand, and somtimes the devlopers' attitude to the generic nature of third-party solutions. Middleware developers have staff dedicated full-time to progressing and supporting these tools – a development Studio doesn't have that luxury. Also, you can concentrate on the content rather than the code, and integration of a middleware solution is much quicker.

Reasons to go down the in-house route can be as logical as the need for a proprietary solution for a very specific game engine, which in turn brings long-term gains for a greater initial investment.

Mellroth acknowledges that it can be difficult to acquire the middleware skill-set unless someone has worked "in the front lines of a developer", but also that it is possible. "The people who pick up game implementation and middleware really quickly, tend to be people who are well versed in Ableton," he says. "…Ableton has a lot of concepts that map well to doing interactive audio for games." Similarly, if you got experience with something like Flash creation the event-based nature of middleware will be relatively simple to pick up.

An Opened Door

The good news for anybody not on staff at a development studio is that the same skills and experience that are valued in linear media are becoming appreciated in non-linear. "We need the higher skill-sets of guys who are peer sound designers," says Mellroth. "I'm a game sound designer, that's where I started, and where I'm at my best. But I'm not even close to the guys that we're working with out of LA, who have been doing sound design for 20 years, day in day out, on big Hollywood pictures... I felt pretty confident in my own abilities until we started getting sounds from these guys."

There is undoubtedly a large helping of modesty in these last words, but the clear message is that the doors are open for collaboration in game audio at all sorts of levels. Don't ever think that film is somehow superior to game – that is absolutely not the case. The word is 'different' – and each has much to teach the other. The fact that the dialogue between the two is finally in full swing is great – all we have do now is make sure we're speaking the same language.

THE ANATOMY OF AN EVENT

An event is something than happens, and the concepts in event-based architecture are based on that definition. Take an example from Mellroth – the body fall. Along with the basic event come variables such as the character type, material, and fall intensity (weight of body, height, and so on). That event can be catered for by layered audio elements whose relative mix, and processing, can be mapped to the event's variables.

In the production flow model proposed by Mellroth, by the time the sound designer gets to work, the event, the layers, the variables, and so on will already be in place. Familiarity with the middleware is still desirable, but more intimate involvement in the game engine is a distraction that has already been taken care of.

The fall event might additionally be sent to other game elements – to other characters for reaction, character graphics, environment graphics, game stats, and more). Once you get a grip on this, it's easy to see a game as a big bundle of individual elements, united by a common interest in events and what to do about them.

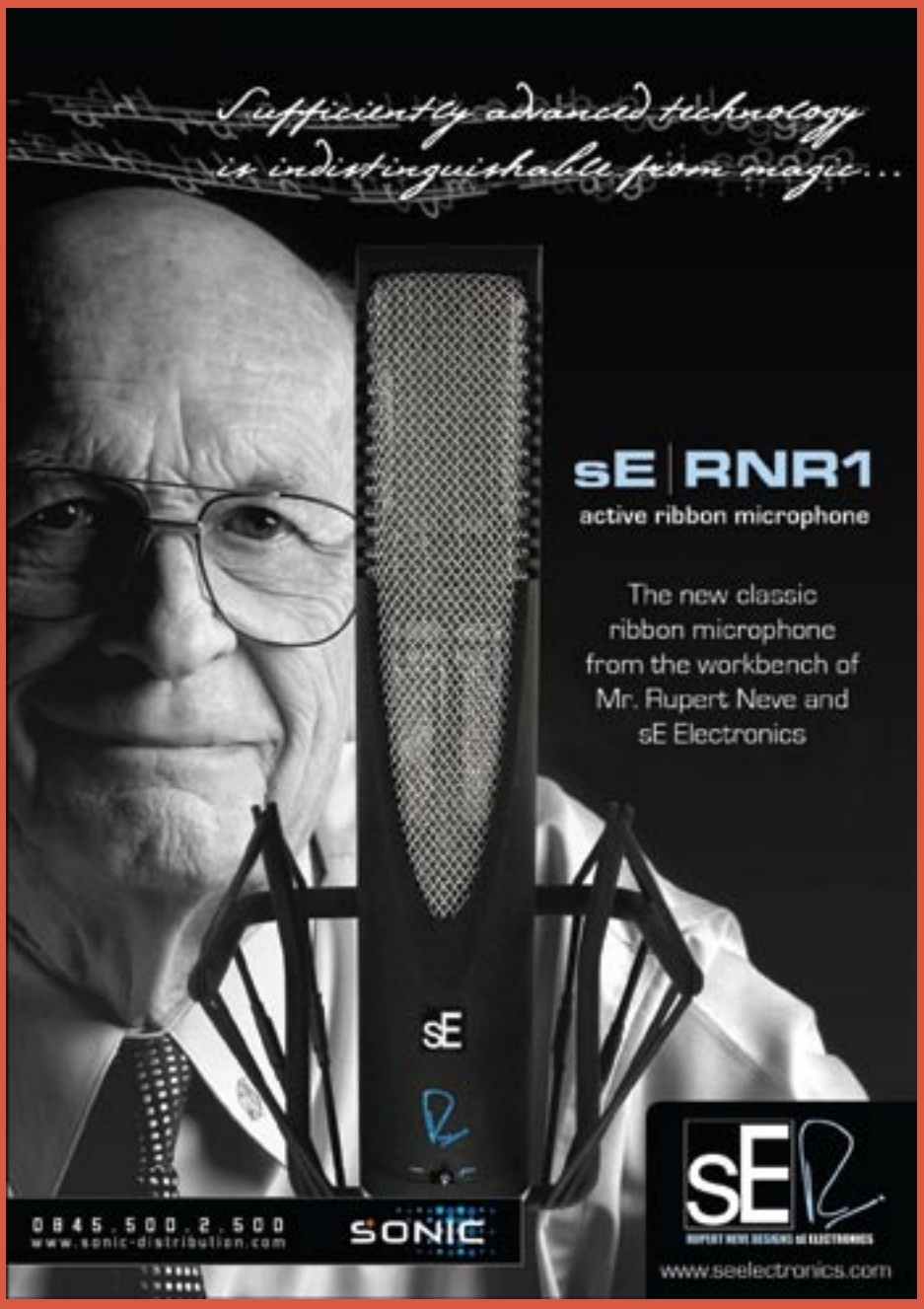
DEVELOP CONFERENCE – BE THERE

Between July 14 and July 16 this year, Develop Conference and Expo (Brighton) will be opening its doors in July to all interested games development. *Audio Media* will be the media sponsor for the Audio Track (16th July) for the second year running. To attend, you can either go to www.develop-conference.com and book your tickets, or you could give our competition a go. Just answer the incredibly difficult question below and email your answer, along with your contact details, to developcomp@audiomedia.com (preferably with the subject 'megapass')...

Which game won Best Use Of Audio at this year's BAFTA Game Awards?

A: Manic Miner; B: Pong; C: Dead Space

Entries must be in before June 1, 2009; no NewBay Media or Tandem Events employees (or their immediate families) are eligible.



Studio Mics

Audio Media selects some of the finest studio mics currently wowing the industry.

We've sounded out the pick of the bunch for your browsing convenience, though if you want even more, check out our Microphones 2009 supplement – available online at the end of this month.

The C 214 recording microphone from **AKG** is a cost-effective alternative to the C 414 family that combines the C 414 dual-capsule system with AKG's patented Back-Plate Technology. The model utilises a switchable 20dB attenuation pad, low cut switch, a double mesh grille for high RF immunity, integrated suspension, and comes complete with a spider-type shock mount.

www.akg.com

beyerdynamic's MC 840 compact large diaphragm condenser microphone benefits from five switchable polar patterns (omni-directional, wide cardioid, cardioid, hypercardioid, figure-of-eight). Building upon the company's MC 740 capsule, the newer model is fitted with an improved low-noise pre-amplifier and an impedance transformer without transducer. The unit is further augmented by two-stage roll-off filters (80 and 160Hz) and two-stage pre-attenuation (-10 and -20dB).

www.beyerdynamic.com

CharterOak's newest offering is the S700 broadcast microphone, a fusion between the company's Series 700 type head amplifier and the S-3 type capsule used in the S600. The S700 looks to address users who may find the E700 'a bit bulky' and would prefer a front address microphone. Designed specifically for broadcasters, it features a robust midrange, smooth and detailed top end, and internal plosive filter.

www.charteroakacoustics.com

audio-technica's AT4022 omni-directional condenser mic excels when used to record acoustic instruments due to a flat, extended frequency response, and a tolerance for high SPLs. Furthermore, the omni-directional polar pattern delivers maximum ambient pick-up for low self noise, while the low-mass diaphragm supports transient response and reduces handling/mechanical noise transfer. The unit also incorporates a switchable hi-pass filter (80Hz) and a -10dB pad.

www.audio-technica.com

Blue Microphones' 'flagship recording tool' is the Bottle, a versatile, hand-crafted unit integrated with a system of eight optional interchangeable capsules (Blue's Bottle Caps) that can be swapped to provide different tonal characteristics and pick-up patterns. The design is a modern rethinking of classic ideas with a Class A discrete amplifier circuit containing a hand-selected EF86 pentode vacuum tube in triode mode.

www.bluemic.com

DPA is offering the opportunity to upgrade the 4006 and 4011 to TL versions that feature transformerless preamps and updated components. The 4006 model benefits from an extended low frequency response (15Hz-20kHz) and increased sensitivity, as well as retaining the acoustic modification accessories that bestow seven different frequency responses and directional characteristics to the user. The 4011 TL continues to benefit from a flat on axis frequency response and smooth off-axis response.

www.dpamicrophones.com

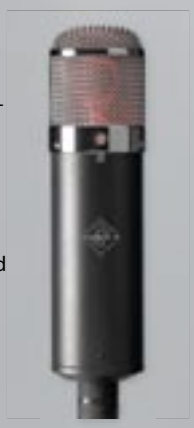
Audix's VX5 condenser mic is suitable for both studio and live use with a supercardioid polar pattern that isolates the source sound from other instruments. The company claims that the mic can handle high sound pressure levels without distortion, is resistant to feedback, and boasts a smooth, accurate frequency response. The frequency range of 40Hz-16.5kHz is complemented by a -10dB pad and bass roll-off filter.

www.audixusa.com

Brauner has distilled the technology of the tube microphones VM1 and VMX into two distinct 'pure cardioid' models. The VM1 offers natural capturing of audio, whereas the VMX supplies 'charming tonal character'. Both feature a frequency range of 20Hz-22kHz, equivalent noise of 9dBA, signal to noise of 84dB, and are hand-built for 'uncompromising sonic excellence'.

www.brauner-microphones.com

Horch has three microphones in its studio catalogue. The RM2J takes cues from Neumann's M49/U47 and operates in two different modes with one featuring an adjustable polar pattern and the other a broad cardioid. The RM3 comes with an integrated shock mount and pop filter and is suitable for female vocals. Finally, the RM4 offers control over tube saturation from a 'clear to a high saturated and compressed sound'.



www.horchaudio.com

The BT-201 range from **JZ Microphones** has a new affordable edition that utilises just one cardioid capsule. No design changes to the original BT-201 structure have taken place, so the all-metal body is still present, which JZ believes provides high reliability, low self noise, detailed sound with smooth, transparent highs, optimal presence, and natural low end response. The option to add further capsules is still available.

www.jzmic.com

The new Genesis is MXL Microphone's flagship tube condenser mic that features a hand-selected Mullard 12AT7 tube, a -10 dB pad, a 150Hz 6 dB/octave roll-off switch, and a 20 Hz – 20 kHz frequency response. The company also recently introduced the V69XM pressure gradient tube condenser mic, the R77 ribbon velocity microphone and the V89 pressure gradient studio condenser mic.

www.mxlmics.com

Sennheiser claims its MKH 800 variable pattern condenser microphone "is the very first microphone to fully utilise the wider frequency response and dynamic range of the new 24-bit/96kHz standard." Other notable features include five switchable polar patterns, extended frequency response up to 50kHz, switchable pre-attenuation, roll-off filter and treble emphasis, plus a transformerless and fully floating balanced output.

www.sennheiser.co.uk

The **Lauten** Horizon is a hand-tuned large diaphragm capsule tube microphone featuring new-old-stock military grade tubes and a solid brass body. Specifications include a -10dB and -20dB pad for recording of sound sources up to 140dB, a custom wound output transformer, and high resolution capacitors. The mic is billed as a multi-purpose workhorse that is also suitable for live sound.

www.lautenaudio.com

Neumann's TLM 67 large-diaphragm condenser incorporates three switchable polar patterns (cardioid, omni-directional, and figure-of-eight), switchable high-pass filter and pre-attenuation, transformerless circuit technology, and a 20Hz-20kHz frequency. The mic is an evolution of the company's U 67 model, with circuitry that's designed to closely reproduce its predecessor's sound characteristics.

www.neumann.com

The Delta live ribbon microphone from Sontronics is equally at home in the studio or out on the road with a particular penchant for miking guitar cabinets. The model evolves upon the company's Sigma mic and features optimised sensitivity, 48V preamplified electronics, a response of 20 Hz – 15 kHz, and a figure-of-eight polar pattern. The unit comes supplied with shockmount and aluminium flightcase.

www.sontronics.com

The KM-69 from the straight-talking **Mercenary Audio** team was born out of a need for a KM-84i suitable for hi-hats. The project evolved to include a design that also captured overheards and acoustic instruments equally as well, whilst retaining the transient response necessary for percussion. The capsule is of European descent, while the amplifier and final construction are undertaken in the USA.

www.mercenary.com

Recently joining **Schoeps'** Colette series of modular condenser microphones is the MK 22 microphone capsule, featuring an open cardioid pattern that combines the directional qualities of the MK 4 cardioid with the MK 21 wide cardioid's sonic character. The mic is ideally suited for spot or soloist application, and is described by the company as 'less critical than the classic cardioid' in terms of capturing sound away from its main axis.

www.schoeps.de

Studio Projects bills its CS5 as 'the ultimate studio microphone', and it certainly packs in some features. As well as offering five switchable polar patterns (cardioid, wide cardioid, hyper cardioid, omni, and figure-of-eight), there are also four selectable pads, four high pass filters, four low pass filters, an FET impedance converter, and a pressure-gradient transducer. The mic is suitable for both vocal and instrumental recordings.

www.studioprojectsusa.com

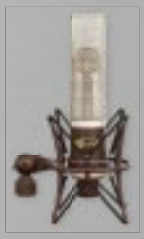
The MA-201fet from **Mojave** is a large diaphragm, solid-state condenser microphone with a fixed cardioid pattern. The model employs a 3-micron gold-sputtered capsule, Jensen audio transformer, military-grade FET, and custom designed low-noise resistors to provide an 'ultra clean signal path'. The mic has been developed alongside David Royer, and is suitable for both instruments and vocals.

www.mojaveaudio.com

The 4400a 'all-rounder' mic from **sE Electronics** features a dual capsule design that packs four polar patterns into one model (cardioid, hypercardioid, figure-of-eight, and omni). Bass cut features are incorporated at 60Hz and 120Hz, with a 0/-10/-20dB pad also included. The mic is just ¾-inch thick, fitting into the palm of a hand, and is versatile enough to be used for instrument, percussion and vocal work.

www.seelectronics.com

The Wedge microphone from **Violet Design** features the company's new VD21 true electrostatic single diaphragm capsule, which is 'damped from vibrations and resonances'. The open, long, double-mesh head provides sound transparency and naturalness, while the cardioid polar pattern offers high output and low self-noise/distortion. The versatile and affordable mic is suitable for a wide range of applications, and comes supplied with a stand holder.



www.violet-design.com

video guide

A Sound Pro's Guide To Video

Post Production: Part 2

KEVIN HILTON cuts in to discover more about the role of the Editor, one of the key roles in post production.

Every creative involved in film and programme making believes that he or she has the key job, but when pushed to it most would admit that the Editor has the pivotal role. Veteran cinematographer Alan Hume says films are made in the cutting room, with his job being to make the scenes and actors look good. Editors are not going to disagree; Stuart Baird, whose credits include *The Omen, Superman, Lethal Weapon, The Legend of Zorro, The Devils* and *Tommy*, next to being the Director the position of Editor is the best in the business.

There is a parallel with sound editing, organising material so it tells a story, but in cinema and television the craft has developed beyond being purely continuity, and can now dictate the rhythm and pace of a piece as much as narrative development. During the earliest days of filmmaking the role of the Editor was functional, topping and tailing the reels and arranging scenes in the right order. The term 'cutting' to describe editing comes from that time, and many of today's practitioners still refer to themselves as cutters, which underplays the role they have.

Rudimentary continuity editing can be traced back to the filmmakers working on the south coast of England at the turn of the nineteenth and twentieth centuries, who became known as the Brighton school. Little of their work survived the years, but Cecil Hepworth's 1905 short *Rescued by Rover* is of great historical importance for its editing as much as the camera work.

Also significant is American filmmaker Edwin S Porter's *The Great Train Robbery* (1903), which influenced fellow countryman DW Griffith, who used editing to great effect in *The Birth of a Nation* (1915). Equally important work was being done in Russia around the same time and both Eisenstein's *Battleship Potemkin* (1925) and Dziga Vertov's *The Man with a Movie Camera* (1929) set the standard for creative editing that not only drove a film along but also influenced the emotions of the audience as much as the acting, the images, and the story.

Most editors started out with ambitions to directy show the artistic credentials of editing. Some achieved that goal, among them David Lean, who directed such epics as *Bridge on the River Kwai* (1957) and, apparently, always considered himself an Editor first and a Director second, Robert Wise, who *edited Citizen Kane* and directed *The Sound of Music* (1965), and Roger Spottiswoode, who cut in TV before working for Sam Peckinpah and helmed Bond film *Tomorrow Never Dies* (1997). Another example is Ealing stalwart Charles Crichton, who made *Hue and Cry* (1947) and *The Lavender Hill Mob* (1951) for the studio. Alan Hume worked with him on *A Fish Called Wanda* (1988) and says Crichton was a good Editor, which made him a good Director, as he knew how to put a film together.

The Director remains the controlling creative force on a film, although in these days of Jerry Bruckheimer and Steven Spielberg taking the role of Executive Producer on both movies and episodic TV dramas, the balance of power has shifted. The Editor has considerable influence on how a production turns out and brings another set of eyes and a new perspective to the process; the position has been described as being the first audience for a film. Just as a Director of Photography will begin to visualise shots after the reading the script, an Editor will also begin to create cuts and transitions in the mind before beginning work.

Most editors claim not to have a style of their own, saying the story and the footage they are given dictates how they cut the pictures. Just as a Director will often work with the same Cinematographer where possible, so directors tend to form a close working relationship with editors. Among the most famous and productive collaborations are Director Cecil B De Mille and Editor Anne Bauchens in America, and Claude Chabrol and Jacques Gaillard in France. As Woody Allen's career and style changed and developed he worked with Ralph Rosenblum and then Susan E Morse. Martin Scorsese has formed a long-term working relationship with Thelma Schoonmaker, who has cut many of his films and won an Oscar for *The Departed* (2006).

GLOSSARY

EDL

A set of initials that will be as familiar to audio types as it is to their video counterparts. EDL stands for Edit Decision List, and while this crucial source of information existed in some form during the heyday of film and certainly came to the fore with linear video editing, it has come into its own with non-linear working and DI. Essentially it is a list of the source tapes, reels or files, shot numbers and first and last frame numbers as designated by the timecode. The picture editor will log what changes he or she has made, including transitions (fades, dissolves) and how these correspond to the sound. Increasingly the EDL is becoming part of metadata and is catalogued using a laptop or desktop keyboard.

OBITUARY

Jack Cardiff, 1914-2009

Jack Cardiff, who died in April aged 94, was the acknowledged master of colour cinematography during the 1940s. He worked for many directors and producers during his long career, and had a successful spell as a Director himself, but for most cinephiles his name will always be associated with those of Michael Powell and Emeric Pressburger and their remarkable series of lightly surreal, other worldly films.

Born Jack Gran in 1914 to travelling music hall performers who used the stage name Cardiff, the young Jack was a showbiz person front the very start and toured with his parents, who sustained themselves during 'resting' periods through bit parts in films. Cardiff started in movies as a child actor, making his screen debut in 1918, then became a clapper loader and a focus puller before moving into camera operation and lighting.

His work behind the camera ranged from the masculine world of John Huston and Errol Flynn in *The African Queen* (1951) and *The Master of Ballantrae* (1953) to '80s blockbusters like *Rambo: First Blood Part II* (1985) and *Conan the Destroyer* (1984), but his greatest achievements are generally considered to be the dream-like worlds he created for Powell and Pressburger. *The Red Shoes* (1948), *A Matter of Life and Death* (1946) and *Black Narcissus* (1947), which brought him an Oscar, have affected and moved audiences since they were released over 60 years ago.

Cardiff had a parallel career as a Director, gaining an Academy Award best direction nomination for his 1960 version of DH Lawrence's *Sons and Lovers*. He is also remembered for the notorious *Girl on a Motorcycle* (1969) but not for the same artistic reasons. In his later years, Cardiff withdrew from active filmmaking but continued to be involved in the business through lectures and conference appearances.

Post Production: Part 2

news

Avid Technologies was at the forefront of non-linear digital editing, marking the shift not just from film but also linear video cutting. In recent years its position as market leader has been usurped by Apple with the Mac-based Final Cut Pro (FCP) system. Recently Avid has been through several restructuring programmes and, during the recent NAB, a complete re-brand.

As part of this new approach Avid has officially acknowledged its rival and passed FCP systems to operate on its MediaNetwork and ISIS shared storage servers. In recent years Avid has developed networked data systems for storing video footage, driven by post-production facilities moving to digital intermediate (DI) working.

While Avid editing workstations continue to be used throughout the industry, FCP has established itself as a parallel system, with the two being used for different parts of the posting process. The new initiative means that the two systems are able to run from the same media server. Avid sees this as allowing users to create more efficient workflows.

The Oscar winning, **The Departed.**

Since the pioneering days of film, many women have emerged among the top flight of editors, gaining an influential place in cinema when others were fighting to break through as producers, directors, cinematographers, or camera operators. This might have something to do with the stereotypical impression that women are better at multi-tasking, but regardless of gender a good Editor needs the ability to deal with a great deal of material and be good at managing people, creating a balance between the Producer and the Director, while also putting his or her ideas into the mix.

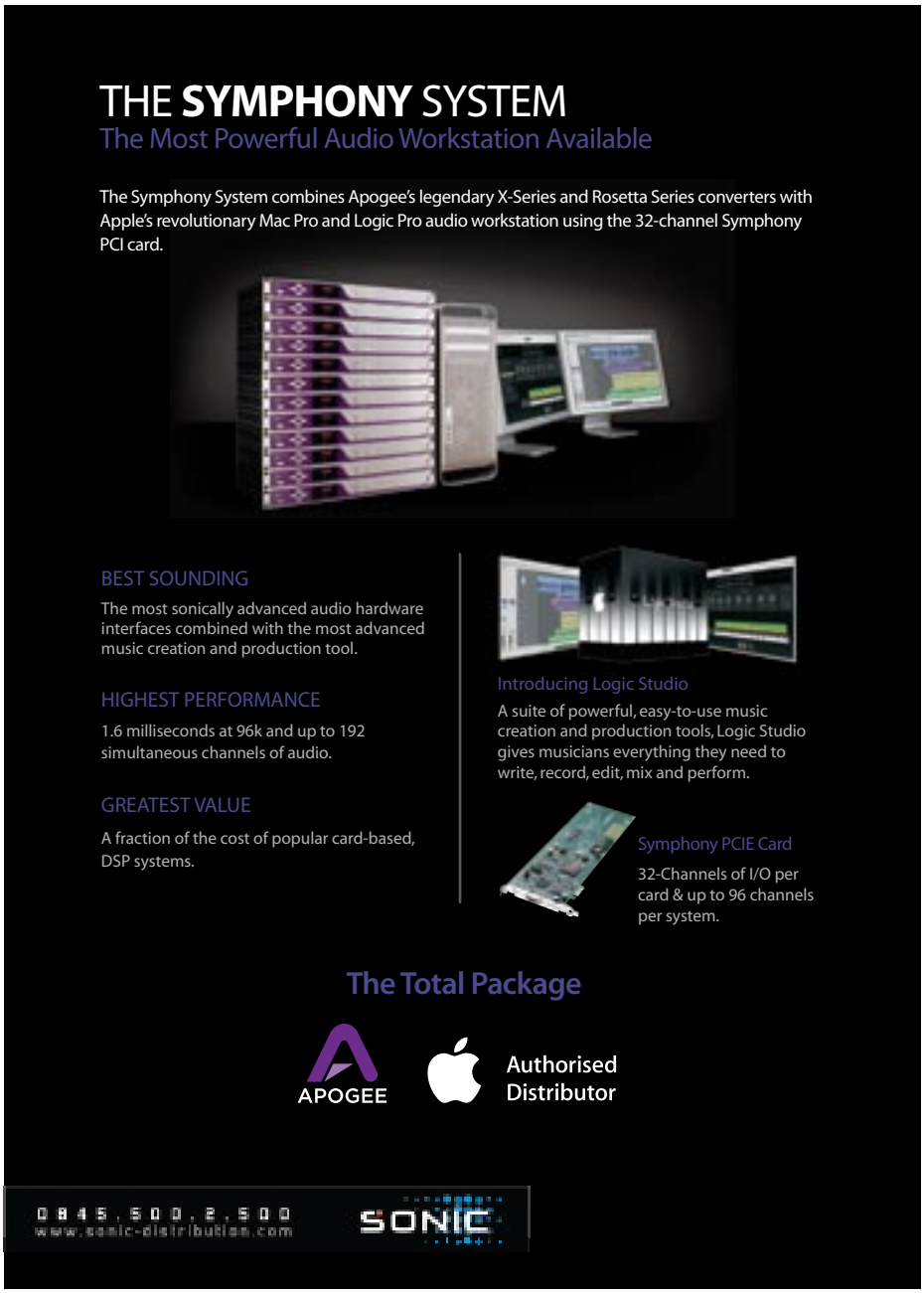
According to Eddie Mansell, who has worked at Granada Television since 1978 and cut such critically acclaimed and popular dramas as *Jewell in the Crown*, *Cracker* and *Cold Feet*, a good Editor should be a reclusive pedant, because the job entails spending a lot of time on one's own and calls for attention to detail. Concentration and patience are still necessary today, but when the process was film from beginning to end these qualities were vital because the Editor and assistant editors had to match and sync every reel with the corresponding audio soundtrack, as well as checking and logging all footage.

The Editor and Director will have discussed possible approaches to the work in pre-production and established a cutting room, either near the film studio or in a post-production facility, ready to receive material. The two will continue to discuss the edit as the dailies start to come through, and the Editor will begin to put together the available footage.

By the time shooting ends, the Editor has all the shots assembled according to the narrative, from which a rough-cut is produced. The rough-cut is the first edited version, at one time known as the initial work print. It contains the best sequences and shots arranged in the most logical, or sometimes not, and artistically right order. This is often called the Director's Cut, a term that has gained commercial power since the early 1990s when earlier cuts of films, notably *Blade Runner* (1981), were released and showed the original concept and intentions of the filmmakers before the studios and producers started meddling.

Editing is largely an intuitive skill; editors admit that often they know something is working but cannot explain why. In Hong Kong action movies, the editing is startlingly obvious. In lower key dramas, the cutting will be unobtrusive but can have as much impact as a much flashier edited piece. Eddie Mansell has said there is no right or wrong way cut a picture. The unwritten rule is that if it works, it is right. This subjective approach can be, in the end, personal preference, and possibly a strong character, that will settle on the one to be used. And going over and over something does not always make it better. Knowing when to leave well alone is as much a part of the Editor's skills as manipulation of the equipment.

This examination of editing will continue in next month's *Video Guide*, with a further look at the different forms of cuts, the art of cutting and the technology used, with that explanation of offline and online edits.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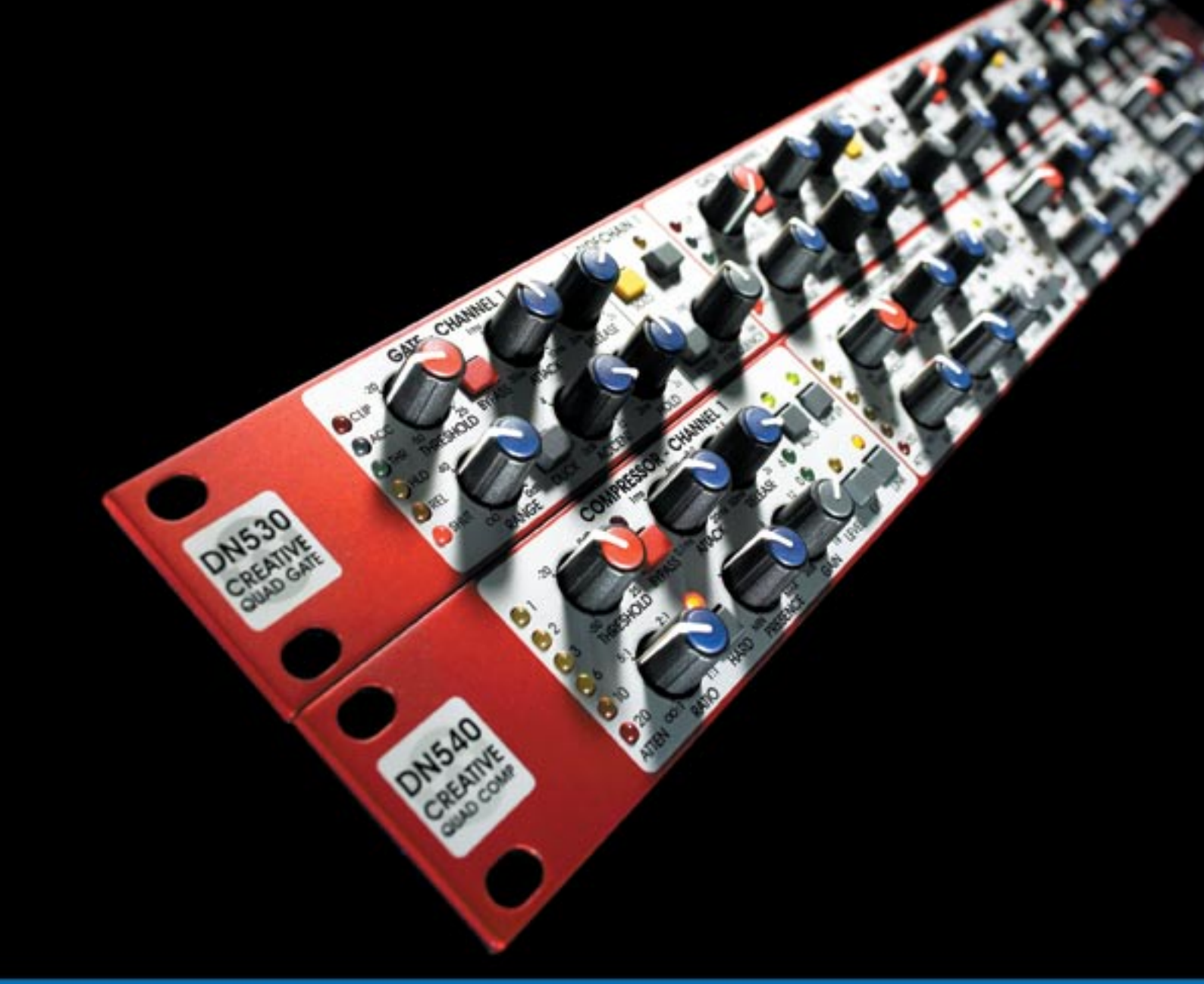

The Creative Series: DN530 Quad Gate and DN540 Quad Comp

With the unrelenting absorption of signal processing into digital mixing consoles, outboard gear now has to contribute something extra special merely to justify its space in the rack. The new Creative series from Klark Teknik does just that. It brings some exciting new tools to the audio party. And with four channels of processing compressed into just 1U, unlocking your creative potential doesn't mean unlocking another rack.

Transient Accenting

DN530 Creative Quad Gate

The key to silent gating is the shape of the gain transition curve that is used to ramp up the signal level when the gate opens (attack) and fade it back down when the gate closes (release). The DN530 features a carefully mapped logarithmic attack envelope, to ensure fast, silent gating.

The DN530 Quad Gate also boasts "Transient Accenting", a new creative feature providing an easy way to enhance the attack envelope beyond merely opening the gate. This can provide up to 12dB of additional transient energy. Its primary application is to provide additional impact on drums and percussion instruments, although it can be used to enhance the impact of many instruments, including acoustic stringed instruments such as guitar and piano. Transient Accenting is unique in that it allows the operator precise control over the amount of enhancement applied to each channel of processing, and can be applied independently of the gating function.

Dynamic Enhancement

DN540 Creative Quad Compressor

Throughout the history of dynamics processing many different types of compressor have been produced using many different types of gain technology. Each type has a distinctive sound. Users have found many applications which benefit from these often unintentional compression audio artefacts, taking the use of compressors far beyond simple dynamic range reduction, sometimes even generating the complete reverse; dynamic enhancement.

It is with these creative applications in mind, that the DN540 Quad Compressor features a unique "Harmonic Enhancement" presence control. When this is engaged, the harmonic content of the material is preserved in a more natural and dynamic state, in a spectral area where we are most perceptive to detail. This allows more compression to be applied, providing greater control of programme dynamics, without the source material sounding dull, lacking in detail and unnatural. Dynamically enhanced compression can produce results that are very similar to multiband compression but with only one additional control required (as opposed to many) it is considerably less time consuming to set up and typically does not require constant tweaking during a performance.

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AUDIO MEDIA

Sound Reinforcement

AMSR News **56**
Technology, application, and installation news from the global sound reinforcement community.

DiGiCo SD7 Mach 2 **58**
DiGiCo's new software upgrade for the SD7 takes the console to near on warp speed. STEPHEN BENNETT discovers just how far the new technology can go.

Neumann KMS 104 plus **60**
Neumann's new live microphone takes centre stage this month as BEN BURNS puts it through its paces.

Product Sampler Live Vocal Microphones **62**
Audio Media provides you with front row seats to a superstar line-up of stage mics. Sound good? Course it does.

AMSR is the regular AUDIO MEDIA Sound Reinforcement section, aimed squarely at SR professionals across Europe. Following the *Audio Media* ethos, the emphasis will be on the product reviews and technical features written by working industry professionals that anybody in SR will find relevant and useful.

NEW PRODUCT

Peavey Electronics recently released its new XR8000 Series of powered box-style mixers. The XR 8300 (2 x 300W @ 4Ω) and the XR8600 (2 x 600w @ 4Ω) feature mic preamps with +14dBu of headroom and a 450Hz mid band Channel EQ. The latter attempts to resolve problematic frequencies to produce clearer vocals without compromising warmth or depth.

www.peavey.com

NEW PRODUCT

Sennheiser has released Wireless G3, the third generation of its wireless series that features a frequency management function, to enable a greater availability of compatible frequencies, plus a switching bandwidth of 42MHz. The system borrows the Soundcheck Mode and equaliser from the 500 series, with the former now operable during the show. Finally, the frequency response has been extended down to 25Hz.

www.sennheiser.co.uk

NEW INSTALLATION

After road-testing Allen & Heath's new iLive-T digital mixing system, Mexico's Bull Dog Café has decided to acquire a unit of its own. The café is one of Mexico City's top music venues and has featured some of the country's finest new musical talent. The system comprised an iDR-32 MixRack and iLive-T80 Control Surface, and was responsible for managing combinations of FOH and monitor sound for the venue's busy schedule of events.

www.allen-heath.co.uk

Meyer Unveils New Products at PALME Dubai

Plus touring news with Paul Weller and Will Ferrell

At the PALME trade show in Dubai this April (26th-28th) Meyer Sound celebrated its 30th anniversary with the release of the new D-Mitri Gigabit network-based multi-channel digital audio processing and distribution platform. D-Mitri features a 96kHz sample rate, up to 64-bit floating-point processing, and 24-bit ADA conversion in a true-networked environment. The system forges the way for future Meyer Sound innovations and digital technology, starting with the LCS audio show control system and second-generation Constellation system.

Out on the road, Meyer Sound has been doing the business for Paul Weller's UK tour with a particularly impressive set up at the 18,000-seat O2 Arena. A total of 60 MILO and MILO 120 loudspeakers were used, along with 36 MICA loudspeakers and four 600-HP subwoofers, while eight M'elodie line array loudspeakers and 18 700-HP subwoofers handled frontfill duties. FOH Engineer Andrew 'Ange' Jones was pleased with the efficiency of the overall system saying, "There were a few halls where, I'll be honest, I was a bit concerned we didn't have enough PA with us. But the MILO has surprised us – it really sounds great, and it goes up quickly."

Will Ferrell provided some comic relief after George Bush's departure from the Whitehouse with his one-man show *You're Welcome America: A Final Night with George W. Bush*, hosted at the Cort Theatre on Broadway. The production utilised a combination of ten Meyer Sound M'elodie line array loudspeakers, flanked by side hangs of three CQ-1 loudspeakers each.

Meyer Sound
+1 (510) 486 1166
www.meyersound.com

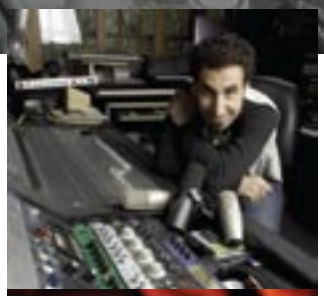
DiGiCo

Chris 'Privet' Hedge, FOH Engineer for Simply Red, has been employing DiGiCo's D5 console to 'simply perfect' effect during the band's current world tour. Privet has used the console extensively for the last three years with an eclectic group of performers, and is particularly impressed with its ability to cope in challenging environments and its resistance to the rigours of touring. He states, "No amount of chucking it on and off airplanes, lorries and forklifts has caused a blip in its operation." The console also lends its own finesse to the live sound, "It has a very natural sound and all the artists I've used it with are primarily organic, live acts. I find the console very easy to lay out and operate intuitively; it's very much a mixer's console." The D5, alongside the D8, also had an outing at Florida's Festival of the Arts in April. The D5 provided FOH input/outputs, while the D8 handled onstage monitors.

DiGiCo
+44 (0) 1372 845600
www.digico.org

Shure-Fire Wireless System

Shure's wireless solutions for Serj Tankian and 'Smokey' Robinson.



Shure's wireless systems have been supporting several big-name productions around the world this month. First up is System of a Down frontman Serj Tankian, who has been performing with the Auckland Philharmonic Orchestra for a reinterpretation of his *Elect the Dead* album. Tankian enthused about the freedom the system gave him, "I like to move around a lot onstage, so being wireless is extremely important. I've got it on my in-ears, and making the transition was amazing." Tankian employed Shure's PSM (Personal Monitoring System) 600s to ensure that he could hear every detail on stage. He explains, "Using Shure PSM 600s helped me define the instruments and hear my own voice better in my mix, so even if I sang low I could still hear myself within that whole huge stage volume swelling up all around."

Meanwhile, Smokey Robinson has made the switch from floor wedges to in-ear monitors with great success. His Production Manager Brian French had been pushing for the change over the last eight years, but it was only after Luther Van Dross made the suggestion to the Motown icon that he decided to switch. Using Shure's PSM 700s Robinson stated, "It saves your voice. When we do concerts, I'm not kidding, I sing for two-and-a-half hours. I don't have to strain because I can hear me." The PSM 700 system delivers simultaneous operation of 16 personal stereo mixes, and features a frequency locator that pinpoints the most optimal frequencies for rapid setup.

Shure
+44 (0) 1992 703058
www.shure.co.uk

KV2 Release Fourteen New Products

KV2 Audio has no less than fourteen new products out in the market. Bolstering the EX Active Series is the EX1.2 single twelve-inch subwoofer and the high intelligibility double six-inch, EX26. KV2 Audio's sister company KX Audio added two new models to its range of MI targeted products. The first is the KX30, a 1,000-watt three-way active loudspeaker with a fifteen-inch low frequency driver, a horn loaded six-inch mid-range driver, and a one-inch compression driver. Completing the range is the KX1.8, an 850-watt single eighteen-inch subwoofer. Furthermore, three brand new product ranges were announced. The ESD Passive Series is the first system from KV2 that is compatible with third party amplification. The LD Series is a selection of four DI style boxes featuring KV2's VHD (Very High Definition) line drivers on every output. Finally, the first cabinets in the Krampera range of electric instrument cabinets are ready for action.

KV2 Audio
+44 (0) 1423 816868
www.kv2audio.com

NEW PRODUCT

Dynacord has released the new CXM 15 two-way monitor for professional applications. The coaxial 15-inch/1.4-inch chassis boasts a radial coverage pattern of 60 degrees and can achieve sound pressure levels as high as 135 dB at 102 dB sensitivity. Notable extras include: a switchable bi-amping mode, Voice Coil Tracking Protection, and pole-mounting options. In other news, Dynacord has announced that delivery has recently been taken for its 100,000th PowerMate.

www.dynacord.com

LIFE-TIME WARRANTY

Audio-Technica has extended its Lifetime Warranty to the Artist Elite and Artist Series of live-orientated wired microphones. Previously only available on the company's 40 series studio mics, the warranty is heralded by the company as "the longest offered by any microphone manufacturer." Audio-Technica Senior UK Marketing Manager Harvey Roberts added "… musicians and sound engineers are now able to enjoy the same peace of mind on stage as users of our 40 Series do in the studio."

www.audio-technica.com

NEW USER

After a long and arduous search, violinist Nigel MacLean has finally struck upon the solution to his pick-up problems. DPA's 4099 instrument mic circumvents previous problems concerning unsatisfactory reproduction of top-ends and low-mids. MacLean explains, "The tone is that of my instrument: pure and simple. The rejection of external sound is truly amazing, and there are no lumps in the frequency response!"

www.dpamicrophones.com

SD7 MACH 2 UPGRADE

SD7 Software Update

STEPHEN BENNETT finds that sometimes, the best things in life really are free. This certainly holds true for DiGiCo, that has upped the bhp on its SD7 'engine' for absolutely nothing at all.

When DiGiCo released its nautically inspired SD7 console (previewed in *Audio Media* March 2008), it was already one of the most innovative and highly specified live consoles on the market. The company has now released the MACH2 upgrade, which takes further advantage of the processing power provided by the Field Programmable Gate Array (FPGA) Stealth processing and Tiger SHARC chips in the SD7. "Say that you've just bought yourself a standard Porsche with a 350bhp engine, and the company call you up a year later and say; 'if you bring it back in we'll give you an upgrade to 580bhp free of charge' – the MACH2 update is a bit like that," says DiGiCo's Marketing Director, David Webster. "We knew we had that capability in the SD7's FPGA engine, so the performance goes up and there is now a higher feature set. In most consoles based around DSP processing, you know that every chip you buy will only do so much – it has a limited amount of power. So you link those together and you decide how many of these chips you can afford to build into a console and what you want the feature set to be – you limit the power in the design stage by the number of chips you install. Because of this new FGPA technology, we are not limited by the DSP engine in there. To continue the motoring analogy, when we initially released the SD7, we knew that our engine was capable of 1,000bhp, but we didn't know what bits to put in it yet! We gave you that 350bhp last year, but we are going to give you all these extra features in the future as you've already paid for the engine with the FGPA."

In more specific terms, the MACH2 upgrade features a huge number of enhancements. Dynamic EQ is now available on all 256 processing paths, and is individually switchable and easily monitored via the gain reduction/expansion meter. The multi-band compressor can now be loaded on all 256 paths along with an extra two compressors per path – giving an additional 512 instances. "There are eight band parametric EQs on the outputs available to compensate for problematic installations," says Webster. "In addition, there's a dedicated talk-back facility which can be easily routed to anywhere you want – even on stage." When activated, this function also has the ability to instantly dim the audio to a particular mix by the desired amount required by the engineer or artist.

Along with upgrades, the MACH2 enhancements also include something of a first on a digital live console – the DiGi-TuBe Super FPGA preamp tube emulation. "It's got its own drive and bias, just like you have with a real tube unit," says Webster. "It's a great feature because you can have tube emulation on all 256 paths." Some of the previously available effects have been given an algorithm overhaul in the new upgrade, but there are also other plug-ins which have been designed to take advantage of the SD7's processing power. "We use the Tiger SHARC chips to run all the typical 32 floating point stereo effects algorithms such as pitch shifters, modulation, and delays," says Webster. "But the Super FPGA allows you to also have 16 stereo high quality reverbs – so from a quality point of view we are talking about something akin to a TC Electronics TC 6000 in there. In a traditional console, you'd need 96 channels for just the effects returns – so the majority of desks out there wouldn't even be able to handle the returns alone." DiGiCo claims that this saves you the equivalent of 48 units or 2.13 metres, of rack space – which could be a major advantage in a rig designed for live use. "You don't really need any extra hardware or plug-ins," says Webster. "Everything you need is 'in the box' – and that's how we have designed the console". DiGiCo also provides application specific software extensions (ASE) for the desk – for example the company's SD7T Digital Theatre Mixing system is physically the same product as the 'standard' SD7, but it's the software package which allows you to operate it as a 'T'. "Even though it costs you more than the standard package, if you already own the product ▸

THE REVIEWER

STEPHEN BENNETT has been involved in music production for over 25 years. Now based in the wilds of rural Sweden, he runs Chaos Studios and writes books and articles on music technology. He's also a film-maker with several music videos and short films to his credit. www.stephenjamesbennett.co.uk

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and get it out on a long running broadway show, for example, it still comes in for less than the D5T package used to cost – and obviously gives you a lot more features," says Webster. DiGiCo believes that many rental companies are moving into different markets – it's not just rock 'n roll shows anymore. "They are doing corporate live shows, or live to air broadcast, or theatre shows," says Webster. "The original design concept for the console was that it would be able to perform many different tasks. Currently it will do live and installs, and the SD7T will allow you to do theatre installations."

Another of the many innovative functions on the original SD7 was the video talk-back function, which enables the engineer to patch in a signal from a camera for a more visual indication of what is going on on-stage – but the screen accepts any video input signal so it's also useful for other tasks, as Webster explains. "I'm with Lenny Kravitz at the moment. He was watching the baseball playoffs in HD via his Mac straight into the console – but he obviously wasn't doing this during the show!"

Dynamic EQ now available on all 256 processing paths.

The MACH2 update is part of DiGiCo's ongoing commitment to its customer base. The software will ship with all new SD7 consoles from May 2009 and will be also be available free to all existing SD7 users.

MACH 2 unlocks hiterto untapped power in the SD7.

INFORMATION

Ⓕ GB£FOC to all SD7 customers

Ⓐ DiGiCo UK Ltd., Unit 10, Silverglade Business Park, Leatherhead Road, Chessington, Surrey, KT9 2QL, UK
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QRX100 pictured with the TRX900 transmitter
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NEUMANN KMS104 PLUS

Condenser Vocal Microphone

BEN BURNS finds a whole lot of positives in the KMS104 plus.

As one of the most respected microphone manufacturers of all time, Neumann will need no introduction to anyone reading this magazine. The KMS104 plus continues a tradition of excellence established by the popular KMS104 and KMS105 stage microphones. It's a phantom powered condenser vocal microphone of the 'fet 100' series with a cardioid polar pattern. Designed for stage use, the mic features an integral pop filter, effective shock absorption, and a balanced transformer-less output.

In comparison with the KMS104 and KMS105, the acoustic properties of the bass response have been redesigned. In particular, Wolfgang Fraissinet, President of Marketing/Sales at Neumann Berlin explains: "In close cooperation with professional musicians, with the aid of extensive practical tests, the KMS104 plus has been especially optimised for the requirements of female voices in the rock and pop field." So it's one for the ladies...

The KMS104 plus is supplied with a padded nylon case and the relevant stand clamp. The suggested retail price is €495 excl. VAT.

First Impressions

Like previous Neumann stage microphones, the KMS104 plus arrives in a heavy duty cardboard tube, in which resides alot of of nylon and Velcro that holds not only the microphone, but also the stand adaptor and the user guide.

Neumann says the case is 'durable enough for touring', which I for one will not contest – the quality is as you would expect. The mic itself looks like a normal KMS104, except it feels a little lighter (298g to be exact) and has the word 'plus' printed along with the model number. Mic-spotters may also notice the difference in the internal foam pop shield when holding the mic up to the light.

The mandatory Neumann badge is securely sunk into the blackness of the mic body, looking very classy in a 'cooker from the 1950's' kind of way.

If you remove the grille (for cleaning), it suddenly becomes apparent how much of a pop filter there actually is. Constructed in two parts, a 5mm thick foam cylinder hugs the sides of the metal grille while an 'end cap', precisely 20mm thick, blocks off the business end and catches all the spit of your lovely employer.

In Use

The first time you hear this mic, it is apparent how the response is 'tailored for the female voice', as there is an obvious bass boost. The proximity effect is strangely subtle with a sort of 'constant' effect, until you get very close. Then it is slightly more pronounced. Basically, the boffins at Neumann have found a way of increasing the warmth of the response, even slightly off-axis and at a greater distance from the capsule than you would expect. I can see this mic becoming a favourite instrument for singers who know how to use mics. With its unique response, I can see artists working with this once and never wanting anything else.

High-level stage monitoring, using condenser microphones on stage, has usually proved challenging for engineers to deal with in the real world. Then the KMS range came along and changed the way condenser mics are utilised on stages.

The amount of gain before feedback from this mic is staggering; I ended up with a single M4 monitor speaker (with just the vocal) and side fills blasting everything else – wow. Vocals with the KMS104 plus just seemed to cut through everything whilst sounding rich and transparent. A small cut in the 1-2KHz range was needed for stability in the room, and a further cut in the 125Hz region helped get the level up, but the graphic only had two small cuts in total. I didn't bother with a high pass filter on the channel, simply because it didn't need one. Even when you point the mic directly at the monitor speaker nothing happens.

In the era of in-ear monitoring, it was only fair to give the mic a try using wireless IEMs. Usually, if a singer removes one ear to hear the ambience of a room, it is possible for 8KHz-10KHz to kick off from the ear-bud feeding into the microphone. Even with its defined high frequency response, the KMS104 plus refused to do this. In fact, the only way to make this mic squeal was to touch the ear bud to the grille and send so much level to the in-ears that it would hurt even the deafest of guitarists. With a good in-ear setup, the mic sounded very warm, with the extended high end providing the expensive sparkle so many mics lack. With a flat EQ, the sound was impressive right away, and once valve compression and a nice reverb were added the vocal in-ear sound was getting much closer to studio territory than stage sound.

The ambient pick-up of instruments behind the singer is always a big issue for the FOH guy, especially if the artist has a very quiet voice. Trying to get the vocal out front to rise above the combination of monitors and backline can be a constant struggle. The KMS104 plus helps us out by exhibiting reasonable isolation when it comes to background noise (for a condenser mic). In small venues where the cymbals of a drum kit would usually be placed very close to the centre vocal position, you will get lots of cymbals down the vocal line – as with any other microphone. Not even Neumann can re-write the laws of physics, but if you think about it, you get a very nice ambient drum mic built into your very nice vocal microphone... Fewer wires too…

'Cupping' the grille of microphones seems to be a favourite hobby for quiet singers – when asked why they do this, they usually say "so I can hear myself". Turning a perfectly good cardioid microphone into an omni-directional telephone may have its place creatively, but it won't necessarily help anyone to hear themselves any better. All they achieve when they do this, is to remove the cancellation properties at the rear of the mic ("the bit that normally faces the big speaker") and kill the frequency response drastically. Around the 2.5KHz mark, however, will be heard very well by everybody unless the monitor guy has planned for this eventuality. Like any microphone, the Neumann exhibits the same properties when cupped. This mic is definitely not for Eminem.

I have to say that this mic does sound great on a thinner or female voice. The richness and texture are emphasised by the natural response of the microphone. I tried to force plosive sounds into the mic, but the filter works very effectively, blocking out any unwanted rumbling ps and bs. Even when blowing hard it's difficult to get a dramatic tornado effect, which stand up comics will not like but ▸

THE REVIEWER

BEN BURNS is a London-based freelance engineer- both live and studio- with credits including Blur, Dido, Embrace, Happy Mondays, and more.

FOH engineers will love. Plugging the Neumann into an Avalon valve preamp gave stunning clarity and warmth The slight rise in frequency response between 5-10KHz gives a shiny top end with very clear speech intelligibility.

The transient response of this mic is obviously much faster than a dynamic, so it will not be the right microphone for all types of performance. Matched with a sensitive voice, however, the results should be stunning.

Technical Stuff

The maximum rated SPL this mic can handle (for a THD of 0.5%) is 150dB – which should be enough headroom to handle even the biggest of transient peaks on a real world stage. I tried shouting a lot, and subsequently my mic pre distorted a lot. I tried a very loud guitar amp and the mic just sat there demanding more level. If you do decide for some reason to use this mic with a heavy metal-screaming kind of band, you would get to hear all the screaming in stunning clarity with absolutely no overload at the microphone end of things.

I found the output of the mic to be very high when compared to other models, which is not a bad thing. By requiring a lower gain setting on the console or mic pre, you will get a better signal to noise ratio from the system. The published specs for signal to noise ratio are, A-Weighted (rel. 94dB SPL) 76dB or CCIR(rel 94dB SPL) 66dB. Sensitivity is 4.5mV/Pa (at 1KHz into 1KΩ).

The frequency response extends lower than that of the KMS104, and exhibits a bump centered around the 110Hz mark. On some deep male voices, a dip in the 125Hz area may be required to achieve a natural sound. For any performer with a thin or high voice, this mic could solve many problems at the source. You don't have to boost the low end to get a rich response, as it already exists at the microphone using acoustic principles. The HF response of the microphone features a rising ramp from about 5KHz up to 10KHz, where it starts to roll off gradually until it sloops down by 6dB at 20KHz.

There is also an acoustic compensator in the form of a plastic cup that fits over the face of the capsule. This seems to be a HF attenuator and could be useful for a very sibilant voice.

If you want a wireless option for the KMS104 plus, Sennheiser handheld transmitters are not going to work. Instead, you will need a 'plug-on' unit (such as the excellent Sennheiser SKP units) with phantom power and sufficient dynamic range for the application.

The (Neutrik) XLR connector is gold plated for a long lasting reliable electrical contact. If you need to remove the connector for any reason, a single cross-headed screw is all you have to remove to slide out the whole assembly.

The dynamic range of the mic amplifier (A-rated) is stated as 132dB, the rated impedance is 50Ω, while the rated load impedance is 1KΩ.

Conclusion

The KMS104 plus is priced higher than some people will think they can afford. But I must give credit where it's due, and commend Neumann on leaving the cheap 58-copy market to others. A quality product like this will obviously last a lifetime, even if it is toured relentlessly. There is an attitude that cheaper products (which need replacing every few years) are better in the long term than high quality items (which last a lifetime). That is fine if you don't care about the end result, but by choosing the KMS104 plus as the starting point for your employer's voice, you are guaranteed a head-start in achieving the best possible results. Do yourself and your sound a favour: get one of these bad boys and impress even the most cynical of technophobes. AM

INFORMATION

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Live Vocal Mics

Parading on stage for you this month are some of the best live vocal mics on the market.

Audio Media has done all the hard work in bringing you a smorgasbord of technical delicacies to pick and choose from. If your stage sound isn't quite cutting it, the following offerings could well be what you're looking for.

AKG has recently released the new limited edition D7 LTD reference class dynamic microphone that features a 'deep-drawing' laminated vari-motion diaphragm to allow fine-tuning without any extra tuning resonators. The super-cardioid pattern gives a frequency range of 70Hz-20kHz, while the integrated high-pass filter eliminates all handling noises. An extra windshield is also included in the package.

www.akg.com

The **beyerdynamic** TG-X 930 is built around the capsule from the MC 930 true condenser microphone, and features a slight treble boost to deliver an 'open and detailed sound' on top of neutral transmission. A stainless steel basket with multi-layer gauze and additional inner basket protects against pop sounds, provides easy cleaning solutions, and improves rear-attenuation for feedback suppression.

www.beyerdynamic.com

The H1 hand-held condenser from **sE Electronics** is based on the sE2a condenser capsule, re-voiced and tuned to accept an SPL of up to 145dB. The mic is suitable for both live and studio use, with a cardioid polar pattern and a frequency response of 20Hz-20kHz. The mic also utilises an internal shock mount that dramatically reduces handling noise during live performances.

www.seelectronics.com

The AE5400 cardioid condenser mic from **audio-technica** heads up the Artist Elite Series and incorporates a large-diaphragm element with a true condenser design. Notable features include a multi-stage grille design for protection against plosives and sibilance, high-quality double-sided PCB surface-mount components, and anti-shock engineering for low handling noise. Furthermore, all Artist Series and Artist Elite live sound mics are now covered by the company's lifetime warranty.

www.audio-technica.com

The PL (Professional Live) Series Vocal Group from **Electro-Voice** comprises seven mics, all benefiting from Memraflex grilles, shock-mounted capsules, and a non-reflective textured satin finish. The PL24 and PL24S (switched version) offer vocal clarity; the PL44 delivers plug-and-play placement of vocals in any mix; the 'EQ-friendly' PL80a enables up-front vocal placement; the PL80c presents a 'Classic' finish; while the PL84 and PL8S are suitable for enhancing detail and presence.

www.electrovoice.com

Sennheiser's E965 handheld vocal microphone utilises a true condenser capsule with large diaphragm technology, and combines the company's knowledge in the field of acoustics with stage functionality. Notable features include switchable pick-up pattern (cardioid/super-cardioid), low cut switch, switchable pad (-10dB), integrated acoustic pop and windshield, moisture damage protection, and a shock-mounted capsule for suppression of handling noise.

www.sennheiser.co.uk

The OM5 from **Audix** is a dynamic vocal mic suitable for stage, studio, and broadcast use. The tight hypercardioid polar pattern ensures source sound isolation, while the natural attenuation at 120Hz helps to reduce boominess and handling noise. The frequency range extends from 48Hz-19kHz, accentuated by a VLM (Very Low Mass) diaphragm for 'natural response, accurate sound reproduction, and exceptional transient response'.

www.audixusa.com

The KMS 104 plus from **Neumann** is the latest development in its stage microphone series with a design philosophy that gears its use towards female vocals in the rock and pop field. The company believes the cardioid polar pattern mic offers a highly transparent sound and maximum reliability with regards to feedback. Furthermore, the robust housing, grille, and electronics ensure protection from challenging stage environments.

www.neumann.com

The soon to be released Super 55 Deluxe Vocal Microphone from **Shure** is an evolution of the 55SH Series, and comes with a self-tensioning swivel mount to permit tilting through 45 degrees forward and 80 degrees backward. The new model is further augmented by a chrome-plated design, tailored frequency response, a shock mounted cartridge, high gain-before-feedback, and strong off-axis rejection. Of course, the ubiquitously robust SM58 continues to remain as popular as ever.

www.shure.co.uk

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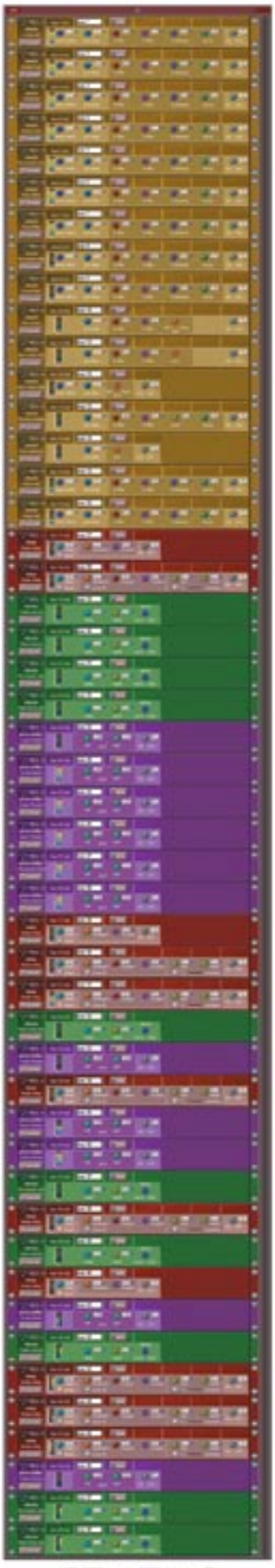
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48u Rack

Effects – the world's first 16 x floating point stereo Super FPGA Stealth digital reverbs. But the power does not stop there. Utilising the capabilities of SD7's Tiger SHARCs, there are now also 32 x floating point stereo effects, including delays, choruses, pitch shifters, etc. This gives an astounding 48 simultaneous stereo effects housed within the console. Even with today's more compact outboard packages, this saves the equivalent of 48U, or 2.13 metres, of rack space and also alleviates the need for 96 inputs and 96 outputs for patching of effects. In fact, the returns alone would fill the entire channel count of many other digital mixing consoles.

DiGiTUBE - another world's first, Super FPGA preamp tube emulation, with full drive and bias control. Available on all 256 processing paths, including channels, auxes, groups or matrix with usage monitored via the DiGi-TuBe icon on the console's screen when activated. A delay usage meter is also now shown on the meter bridge when this function is used.

Dynamic EQ – now available on all 256 processing paths and on all four EQ bands, effectively adding 1024 frequency driven dynamics to the console. These are individually switchable and can be easily monitored via the gain reduction/expansion meter.

With regards to the desk's dynamic EQ, "I've always used a BSS DPR901 equalizer with Brandon's vocals as he loves to cup the mic for that harsh sound. But when that's amplified out front, it can get a little out of control sometimes, so I use them to help compress set frequencies to try and smooth his voice out. Having that built into the console, and having it sound even better than a 901… Well, there's not much else I can say." James Gebrhard (The Killers FOH Engineer)

Multi Band Compressor – again available on all 256 paths, adding an extra two compressors per path giving a further 512 dynamics to the console.

Talk-to-buss with dim function – designed with the monitor engineer in mind, this is a dedicated talkback channel that can be routed to any aux buss, allowing direct communication to any wedge or in ear mix. When activated, this function also has the ability to instantly dim the audio to a particular mix by the desired amount required by the engineer or artist.

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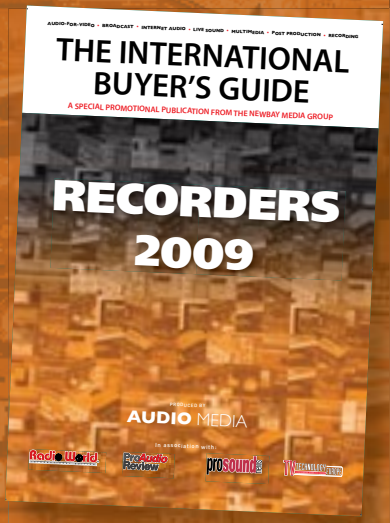
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C4TCH 22 – Dental Dilemma

Take a peep over the top of this mag and have a look at the people around you. Should anybody happen to return your gaze, try flashing your pearliest grin at them. Three things could happen here. 1: You smile, they smile, you wonder why you're both smiling, and then desperately thwart the moment by smiling at something inanimate before getting back to work. Not a problem. 2: You smile, they smile, and you realise with horror that you're staring at what could be a scaled down, burnt picket fence clinging to the inside of their mouth. Not so good. 3: You smile, they don't smile and instead glance with a mixture of revulsion and fascination at the shards of aimless calcium protruding from your embarrassed gums. The worst of the bunch. But what does all this mean? Well, the reaction you received could have a big effect on your job prospects.

Research from Simplyhealth's Annual Dental Survey has shown that almost one in eight managers working in arts and culture has a problem trusting staff when it comes to dental visits, yet 44% of bosses cite bad teeth as a reason for not promoting staff. Furthermore, 33% of managers would not take a staff member to a meeting should they be suffering from a dodgy smile or bad breath. Think on if you're inexplicably surfing youtube while the rest of the team are discussing business strategy over coffee and shortcake in the 'Sharing Suite'. Rest assured though, we'll all be interacting in Cyberspace soon enough anyway, where you can have a face like a classical Grecian sculpture and teeth white enough to light motorways. It might be best just to (not) grin and bear it for the time being.

www.simplyhealth.co.uk

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Welcome

Welcome to *Monitors 2009,* an overview of the professional studio monitor market for the production professional.

Now updated and refreshed, this guide is a collection of promotional articles looking at nine of the world's leading monitor manufacturers and their product ranges. Inside you'll find the stories behind the drivers – the ethos' and design ethics that go into producing the one component in your studio that actually brings sound out from the boxes and widgets, and into the air – and details of the products themselves.

Monitoring provokes much debate, much passion, and possibly more subjective wrangling than any other node in the signal chain. Whether it's the box, the magnetics, the materials, the electronics, or the room that makes the difference, the term 'reference' is never used lightly amongst those who rely on hi-fidelity, accurate and natural voicing, spot-on transients, and a little 'something' extra. That something makes the difference between just another monitor, and a reference that many pros remain loyal to and rely upon for entire careers.

Hopefully this guide will provide a good foundation for your monitor buying homework during 2009, and push back the boundaries of your considerations. To complement the profiles, we've included three articles from respected names which should prove interesting, useful, and even thought-provoking. And to finish off, there's a big directory studio monitor manufacturers to further augment your options.

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Good Vibrations

So, you've got a monitor... what do you do with it? Acoustic oracle, White Mark's David Bell, talks to Audio Media magazine about the basics of speaker placement, rooms, and stands.

Audio Media: It's common knowledge that you can't consider speaker performance without considering the room. Could you start us off with some basics?

David Bell: A room and a set of speakers should always be considered as a unit. Both influence what you hear, and the interaction between both influences what you hear almost as much as the choice of either.

So, if you to have a production space with free-standing speakers and you put the speakers largely where they need to be, and symmetrically in the room, the room will interact with the speakers in a number of ways. It will itself have modes which will cause bass colouration, and the positioning of the speakers will alter the interaction of the speaker with the boundaries. By that I mean it will reflect off the walls and you'll have 'coherent interference'. This will cause notch filtering, and is principally noted in the lower mid and the upper bass, which is really where the character of voices is stored.

Even free-standing speakers ought to be set up by someone who knows what they're doing. You will get interaction between the walls, the ceiling, the floor, the speaker, and you. You need to optimise that. You can do this by listening to stuff that you know well, and adjusting the speaker position – moving it six inches will make a huge difference.

As a fundamental thing, it's a good idea not to have it the same distance from the floor, the ceiling, and both walls so that the interactive effects of those boundaries are not lying on top of each other, and therefore smeared a bit.

A second thing is that the speaker is trying to give you a full bandwidth of output out of its speaker cones. It should be borne in mind that as frequency goes down, as much will come out of the back of the speaker as comes out the front. The tweeter fires higher frequencies forwards in a cone – it's directional. It becomes less directional as the frequency its carrying goes down to a wavelength comparable to its diameter and larger.

The same is true of the midrange and the bass, but the bass tends to be much more 360-degrees radiating, because basically the box vibrates.

On A Sure Footing

AM: What advice do you have on stands?
DB: You need to mount it on something solid, so that the mounting you've got doesn't absorb frequencies specific to the mounting... This is particularly true where you've got a nice bit of furniture, and you've got a computer keyboard and a little mixer, and you stand the speakers on a little bookshelf shelf at the top of it. At least put a paving slab on top – something heavy that the speaker can run against.

There's an awful lot of rubbish talked about high end, really expensive, rubbed-against-the-thighs-of-virgins magnesium-alloy... What you want is a sodding great heavy thing to stand your speakers on – and it's no good putting it on a wonderful speaker stand, wonderfully linked up to a diaphragmatic wooden floor, because that's just the same. Although if your speaker stand is full of lead, it's then going to be quite heavy, so the resonant frequency of the floor membrane it's standing on is going to be much lower.

AM: Is there any sense in de-coupling speakers – by using foam products, for example?
DB: You have to be careful. If you get a piece of foam and stand a speaker on it, the frequency at which it is de-coupled – the resonant frequency of that compressed, sprung system – is proportional to some interesting constants, times one over the deflection. The further you deflect it, the lower the frequency it works at.

We try to get our floors to deflect about 6-8mm, and that gives you between 8-14Hz resonant frequency. So anything from double that up – from 20Hz up – is then de-coupled… But if you've got, say, 2mm of deflection, your resonant frequency would be higher, and would only clear once you're well into the audible range. Thus, you've got a problem at the bottom end – it's getting absorbed by stuff that's not very well de-coupled.

This is why proper mounts are better than bits of plastic. They manufacture them so that if you put a certain weight on it, you will get 8mm of deflection, and it's known to be within the elastic limit of the squashy stuff, so that it will work properly at that frequency.

Up The Ante

AM: What about moving on to bigger rooms, bigger speakers, and bigger budgets?
DB: You can start designing the room to try and increase the effectiveness of the room-speaker combination. One of the things you can do is to minimise the effect of bass reflection by soffit mounting the speakers – building them into the wall. This is done not just by sticking a piece of wall fabric under the speakers, but by building them into a substantial wall in a big, heavy box. We then pack the front wall – we use mineral wool, though other people do others things.

The bass end becomes more efficient because it's all going forwards. If you correctly soffit mount a speaker, you've got the early bass reflections under control. And then if you carefully design the distance between you and the walls, you can further improve those early bass reflections.

Architectural Considerations

We now need to look at the room itself. Cubic rooms are a bad plan. Everyone's heard of the various imperfect ratios of height to length to width. These all work in different ways, and to different standards; and different ratios have different devotees. But effectively

Can't Heat The Stand?

David Bell relates a lesson in what no monitor should stand for...

"The first studio we ever built was in Paris many years ago. They mastered a mix and sent it off, but it came back with the comment that something was fundamentally wrong with the room – 'you have tonnes and tonnes of bass on this, what's going on?'. So the studio rang us up and said, 'Help, come to Paris immediately.'

"We flew to Paris and asked them to recreate the situation in which the project had been mastered. So the guy carried in some big self-powered nearfields and stood them on television stands, hanging over the meter-bridge of the console.

We listened to the mix, and it sounded okay. Then we listened to it on the main speakers, and it sounded absolutely horrendous, with vast amounts of bass. The client said, "There must be something wrong with the room," and I said, "I think not." We lifted the speakers off the stands, and put them on the meter-bridge of the console – it was a large console, so it was a very substantial meter-bridge – they stood directly over the legs on the meter-bridge. Lo and behold, all the bass came back.

"When we measured it, there was a 12dB per octave drop to about 75Hz when on the stand, and not when it wasn't on the stand. All the bass was going into warming the stand up, and not going into the room."

when we're designing a room, as one of our clients once said: 'no-one's going to let you shave a yard off the back on the off-chance the bass is going to be better'.

But we adjust the width and the height, and as we do it we try and maintain an un-relation between the fundamental things. This is what the Dolby specification does, for example. It compares ratios and won't let you use destructive ratios. The room modes are then spread about the room.

There are room modes in any room, in any space, but if you have them all occurring at different frequencies and unharmonically related to each other, then your mind can tune them out, if you like. As long as there's not a huge hole where you're never going to hear the bass at certain frequencies, the sharp holes caused by defined modes will go.

When you're balancing music, if you don't know that the euphonium is wrong because it's got a chunk missing out of the bass that the room is removing, that's a bad thing.

Band Manager

AM: What about higher frequencies?
DB: Windows, doors, consoles, and *bald people* provide hard surfaces for sound to reflect off, cause colouration in the mid and the top. This is where the dispersion angle of the speaker's upper frequencies becomes important, and you then have to consider the reflection paths. But again, there's only a certain amount of that you can do... The console needs to be in front of you – if it's behind you, it's not going to work very well.

This is why I fundamentally believe that for a very good, professional, acoustically neutral response, you do need them to be set up, and you do need them to be set up properly by someone who really knows what they're doing.

They will look at the the distribution of the bass, and the sub bass units, how they cross over and match, and unavoidable reflections within the room. It's not easy to deal with a single very, very powerful 'suck-out' caused by all three modes of the room being coincident, but if you've got clusters of suck-outs in the upper mid for instance, due to a whole series of similar reflections off different surfaces, you can generally raise that area of the output of the speaker to compensate. It's the average that you're looking at, across the frequency range.

Particularly since more and more people are moving away from mixing with one valve and a bit of variable resistance, and putting in things like computer screens – they put an expensive monitor in the front wall, and surround themselves with monitors. You can do something about it, but that's where you need to get involved with someone who really know what they're doing.

Even more critically, the creation of a unified set of sub-basses and full frequency cabinets in a surround environment is a complex set-up task that is very much best achieved by someone who knows what they're doing with digital crossovers, because you've got time delay and very close control of the frequency parameters of the equalisers you're putting in.

Stick-on Saviours

AM: There are plenty of acoustic treatments on the market, from foam panels to high-end diffusers. Are these all valid materials?
DB: We're trying to produce an ideal, uncoloured direct feed of the loudspeaker output to your ears, so we try and suppress the early reflections, which tend to come from the side walls, the ceiling, and the front wall – so the front tends to be absorptive. We then put a load of mid and high back in again, by putting diffusers at the back. The diffuser is designed to break up the sound – to stop it being coherent so we don't get the comb filtering effect I was talking about earlier.

There are other philosophies, and quite a few of them depend on being able to absorb everything, and then put some back. But you can't absorb everything. Look at a 64-foot organ pipe, and then tell me how you're going to absorb that with a bit of foam. The foam treatments will only work on reasonably high frequencies. In a lot of home studios people have slapped up a load of little foamy panels, and then complain about problems with bass. What they've done is taken everything else away so all they've got left is bass. If we then put bass absorption in there, we may as well just turn the volume down.

You need to absorb things at the points that are critical. You start off with an ordinary room, and then you start putting absorbers on the wall to stop early reflections; then you start considering the bass; and then you migrate slowly up towards being a full studio.

INFORMATION
www.whitemark.com

The Great Divide: *Monitors Vs. Speakers*

Stephen Bennett talks to Andy Munro, renowned and respected design engineer, about the differences between monitors and speakers.

While having much in common, the worlds of audio recording and reproduction often seem as far apart as the famous men and women from Mars and Venus. The technology and physics relating to both fields are almost identical, but as soon as human perception rears its ugly head the two split faster than a Hollywood marriage. Nowhere is this more apparent than in the field of loudspeakers – they've even got different names, 'speakers' in the hi-fi world, and 'monitors' in the recording studio. But aren't the two products just the same really, with the only differences being cosmetic? Studio monitors tend to be ruggedly built with magnetic shielding, while hi-fi speakers are usually designed to fit into a home environment and so usually sport wood veneers and fine polish.

The situation is further blurred by the fact that many prominent studio and mastering engineers use speakers designed for home use in their studios, while you can often find a pair of well respected studio monitors in front of the serious audiophile's settee. Other differences between monitors and speakers destined for the home often seem trivial; monitors are often advertised with exacting paper specification charts, while their hi-fi brethren are often more likely to be described by epithets such as 'neutral', 'pace-y', or 'having a good bass response.' In fact, may hi-fi speaker manufacturers say that specifications, beyond the basics of power handling and frequency plots, are worthless, and the only way to choose a speaker is to audition them in your home. Monitors are often said to be designed to be 'accurate', while hi-fi speakers may have a 'sound' – but sometimes two products from the same manufacturers are described in both fashions – when in effect they are basically the same speaker! When it comes to the crunch, both studio monitors and hi-fi speakers are basically just some drivers mounted in a box – so is there anything that is really distinctive about a studio monitor as opposed to a speaker destined for the home?

To answer this question I turned to one of the most respected monitor and studio design engineers in the business. Andy Munro has been working in the field of acoustic engineering since the 1970s and has designed and installed monitor systems in many studios, including Peter Gabriel's Real World, along with one of the largest in Europe, Puck studios in Denmark. "We've done a lot of independents as well," says Munro." The company was growing at a time when the independent recording sector was burgeoning. I worked very closely with record producer Mike Hedges, and through that got involved with the likes of Souxsie and the Banshees, Manic Street Preachers, and Travis.

> "Some hi-fi companies offer 'matched' pairs of speakers, but two wrongs don't make a right because any one pair will be different from any other – and God help you if you blow a driver!"

In The Eyes of The Beholder

As for studio monitors, Munro turns to the visual world to describe the differences between the studio speaker and its home-based counterpart. "It's relatively simple really – you can use the analogy of a video monitor to demonstrate the differences. A video monitor has to truly represent all the visual frequencies in the spectrum in as even a way as is possible. So if you imagine a sound spectrum as if it were a colour one, it's got to go all the way from red to violet – perhaps right even up to the UV range, with no distortion of the spectrum and with a relatively flat response at all intensities of brightness. A lot of ['hi-fi'] speakers are tweaked to give you a very flat on axis response, which looks great on paper, but because of the enhanced directivity say, or because of the way the frontal radiation of the speaker has been tweaked, it won't necessarily give you a balanced sound in a room. Munro believes this is why so many speaker systems sound different even when using similar components. "It's the difference in the power response and not the frequency response," he says. "What happens in the acoustic domain is that you don't just hear the direct sound of the speaker. People talk about 'near -field' speakers as if they were anechoic almost by definition – which implies that there is no far-field response – but that's just not true. You only have to be one metre from a speaker, and the wave-front emanating from the unit at low frequencies is something like thirteen square metres, so you can see that 99 percent of the energy is going into the room rather than direct to your ear – which of course is much smaller than the room!

So at low frequencies you have a room response whether you like it or not. A speaker may be very directional at high frequencies and may sound like it's in your face but, in reality, the balance may be completely wrong, with most of the lower frequencies coming off the walls. A less directional speaker gives a more even room response, and more of a complete balance between direct and reflected energy. With a directional speaker some equalisation is inevitable – hence the 'X' curve in film dubbing theatres."

Start At The End

So, beginning with this simple premise, Munro designs his speakers by starting from exactly the opposite way you'd expect. "We do things backwards!" he laughs, "We

measure the on-axis response and the indirect response of the system using our computers and measuring systems, and try and get a balance between the two." Though Munro is a great believer in the technical aspect of speaker design, he's not unaware of the part played by the human ear. "A lot of people design speakers by ear and a lot design purely on paper – and they are often completely wrong," he says. You always end up with something that isn't quite musical enough and you always have to balance the two. I do believe that a monitor should be spectrally correct, but personalities can add a different flavour – you get the interpretation factor from different people."

Monitor speakers not only differ greatly in design, but also in the type of components used, and you'll see systems with different tweeter dome and cone materials, horns, ribbons, and esoteric case designs. Munro doesn't think that designing speakers from the component-end upwards is the best way to achieve excellence. "Sometimes the results you obtain are an accident of the philosophy or technology that you are using," he says. "If you're using a horn loaded tweeter or a wave guide for example, it's a deliberate choice and you must then balance everything else against that choice. I fundamentally believe you should start with something with a flat power response and then tweak or tune it very slightly to give it a neutral character."

So if monitor speaker design is a simple technical problem, are the specifications published by most monitor manufacturers meaningless? Not if they are accurate, says Munro. "I work mainly with Dynaudio in Denmark and while I can't speak for other manufacturers, their published driver specifications are totally and consistently accurate to 1dB for any driver, and therefore the combined performance of several drivers becomes a very precise specification. Some hi-fi companies offer 'matched' pairs of speakers, but two wrongs don't make a right because any one pair will be different from any other – and God help you if you blow a driver!" If there's an ideal way to design and manufacture a monitor speaker, why then are there so many different models on the market? "It's all basically down to economics," says Munro. "The best drivers and the ones that have really good power handling are extremely expensive and there are relatively few companies that use them in their monitors. Making something that's truly accurate and fulfils the requirements of a studio monitor, such as sufficiently smooth power handling characteristic and the controlled dispersion associated with it, will always be a very expensive process.

The M4 –a Munro Acoustics design.

"In my opinion, any monitor worth the name should be able to reproduce the full audio spectrum and dynamics – and that means going up to a 120dB broadband peak sound pressure without compression – that's going to be a pretty tall order for virtually all the small speakers on the market."

Most speakers destined for the home will have to be compact for cosmetic and practical reasons, so you'd be unlikely to get something that can reproduce the full range of frequencies and high sound levels accurately and still fit it into the typical domestic environment. "They also lift bass by relative loss of mid-band sensitivity, so instead of 90dB for 1W you get 83dB," says Munro. "So you need more power and drivers that could handle the amount of power needed – so you have a bit of a conundrum. To make a small driver that can handle this needed power and a control system that would stop it blowing would be a very expensive system. You can't realistically make this kind of system for a few hundred quid." Effectively, low cost systems have to be compromises, and that is why there are so many designs on the market – there are plenty of compromises to choose from. "In an ideal universe everyone would buy expensive speakers," says Munro.

Blurring The Boundaries

So what about that doyen of the modern day recording studio, the ubiquitous Yamaha NS10 – which was originally designed to be a home-based hi-fi speaker? Munro called it "A slightly weird leftover from the 1980s, which has become, for better or worse, the 'NS10 philosophy'.

"It's the idea that you can only get a really good mix through a pair of speakers which make it sound as if it's being played through a transistor radio. I don't subscribe to that philosophy – though the NS10, as it's such a simple loudspeaker, has a very good transient response!" The NS10 also has a slight lift in the midrange, which brings out the vocals quite well, and Munro finds that they can be a useful adjunct to a pair of accurate monitors, but that to do a final mix on them would be 'acoustic suicide'. This may be where boundaries between home hi-fi and studio monitors are blurred, because a lot of successful albums have been mixed on such gear. "The great albums that have supposedly been mixed on NS10s will have also been listened to, and possibly mastered on, high quality monitors." says Munro."

So while Munro has strong beliefs in 'the ideal studio monitor', he also has a place for a basic home-style speaker in his philosophy. As long as people see the need for superb monitoring, set in a fine acoustic space to produce audiophile recordings, his services will continue to be in demand. Meanwhile, the audiophile hi-fi world can continue to discuss the merits of 'timing', 'rhythm', and 'flat and round earth presentation' of the various hi-fi speakers on the market.

INFORMATION

www.munroacoustics.com

Ears Right?

Dave Foister challenges some common assumptions about how we 'hear' our music, and asks why our experiences of sound can be so very different.

A few years ago, a reputable mastering engineer went on record in a magazine article stating that he usually found it difficult to tell the difference between mono and stereo just by listening. Admittedly, his business apparently suffered after this startling revelation, but that doesn't alter the fact that he'd been doing a perfectly good job for several years. He had worked on a project of mine, and I'd happily have used him again. But what it did highlight is how widely our perceptions of what we're hearing can vary, and how wrong our assumptions about what matters can be.

Of course there's nothing new in the idea that appreciation of recorded sound and audio equipment is very much a subjective thing. You can measure all you like, but informed, experienced grown-ups will still come to blows over which technology, which technique, which piece of kit is 'better'. As much as anything else, this is true of loudspeakers.

ADAM S3X-H

In 1996 the AES published a paper, AES20, drawing up a standard for listening tests on loudspeakers. In its acknowledgment of all the pitfalls of assessing equipment just by listening to it, and in its attempt to eliminate the variables and establish a framework for consistent and fair tests, it is a brave document. Most of us will never have the time or resources to carry out its recommendations to the letter, but it's hard to deny the force of its arguments and premises. But revisiting it the other day, I was struck by some of the things it regarded as problems, and some of the assumptions contained in it, and I was reminded of the aforementioned hapless mastering engineer's innocent but damning admission.

Balanced Opinion

I have a problem with some of the assumptions that generally seem to be made about how we hear loudspeakers. I don't claim to have Golden Ears by any means, but some of the aspects of loudspeaker listening that are supposed to be problematic don't seem to bother me, and I'd like to know if others feel the same. I don't get it when people sit in the sweet spot and can't localise instruments in the stereo image, even on rubbish loudspeakers. It doesn't seem to matter whether it's multi-miked or purist, unless something's hard left or right they just can't place it. I don't get it when people can't hear the stereo image at all if they move off-centre; it sometimes seems as though only a foot off to the left, they stop hearing anything coming out of the right-hand box. It doesn't seem hard to me to compensate for where I am and hear everything where it should be, even if I'm right off to one side – not with as much precision perhaps, but it's all still there. With all due respect to our mastering engineer, I don't get it when people can't tell the difference between stereo and mono; to me, mono is like listening through a crack in the door, and stereo is what you get when you fling the doors wide open and march into the room.

Un-Phased

But most of all, I really, REALLY don't get it when people can stand in front of (or in fact anywhere near) a pair of out-of-phase speakers and not be aware there's anything wrong. It's bad enough in a friend's living room, where perhaps a pair of untrained ears can be forgiven for not noticing that there's no bass, not even a vague idea of where anything's supposed to be, and above all an agonising feeling that your eardrums are being sucked out of the sides of your head, there's a paint-stirrer in your brain, and last night's dodgy curry is about to wreak its havoc.

It's also possible to recognise that the shelf-stackers in a record store are immune to similar feelings as they wander around the aisles of CDs between speakers that were apparently installed by a colour-blind orang-utan. The fact that some of us can't stand to spend more than a few seconds in those particularly sour spots would be a complete mystery to them; the fact that it loses them sales, as potential customers run gagging from the shop, should bother them, but clearly doesn't. Likewise the home electronics stores, but I suppose that shouldn't be a surprise; if they can cheerfully display a whole wall of TVs where no two pictures are even slightly similar, then the proudly-displayed stereo with its speakers wired in opposite polarity isn't going to phase them at all.

But when people who consider themselves to be audio people don't notice, I have to wonder what exactly we're all experiencing as those little variations in air

pressure hit our auditory canals. I once went into a control room that had recently been completed and was being shown to me by its proud designers and installers. To be fair, it was a DIY job, but an expensive one by people who claimed to know what they were doing. You know what's coming: as soon as the first millivolts hit the drivers I wanted to run screaming from the room, pausing only to collect a sick bag. They had been working in there since the room was finished, with the monitors wired in opposite polarity, and hadn't noticed. When I put it right, as I felt duty-bound to do in as diplomatic a way as I could muster, they acknowledged that it sounded better but couldn't put their fingers on why, and pronounced the difference to be 'subtle' and something that only an experienced engineer like myself would notice. Is this true? Seriously, write in and tell me.

Back To School

But there's worse to come. I subsequently participated in a seminar about audio training, where I raised the idea that there are audio people and non-audio people, just as there are people who are musically talented and those who are not. Most of the audio people I know began by messing about with sound equipment at an early age; my dad bought a tape recorder when I was eight and I was soon trying to break it, finding out that it worked by electricity by connecting a light bulb to its speaker output and watching it flash, and experimenting with the rubbish sound-on-sound system that did nothing more than turn the erase head off. Sad and nerdy I know, but it got me where I am today and I suspect the same is true for many an audio professional. I suggested that it was no more possible to teach somebody to be an audio pro from scratch at college than it was to train somebody to be a professional musician in the same time; there had to be a natural aptitude and a long-standing enthusiastic involvement for it to work.

Dynaudio BM12A

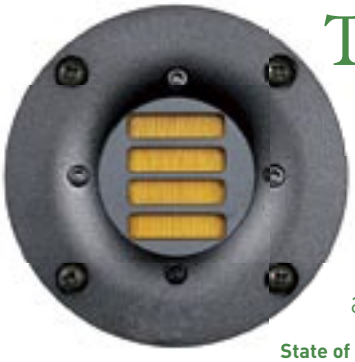
To demonstrate my point about those who've got it and those who haven't, I related the above story about the out-of-phase monitors, suggesting that an inability to discern the difference should mark someone down as not cut out to be in pro audio and rule out the possibility of ever working in it. To my astonishment, a senior guy from a well-known training organisation dismissed what I was saying by commenting, "well maybe they liked their monitors out of phase". To me (and I suspect to many others in the room) that kind of proved the point, and damaged permanently my regard for that particular training organisation.

Focal CMS 50

But, worryingly (there is a point here, honest), AES20 recommends, early in its guidelines, using test tones to establish whether the speakers under test are correctly wired in phase. Feeling, as I do, that it's no more possible to miss out-of-phase speakers than to miss a giraffe walking into the room, I would regard this as completely unnecessary; but if the august AES members who drew up the standard feel it to be important, I have to wonder whether my sensitivity to the phenomenon is unusual. Another example shows what I mean: years ago I was at an Ambisonics seminar and demonstration at a top studio, attended by some of the industry grandees. When it came to the demo, on a system that had clearly been carefully set up and checked by the people presenting the day, some of us felt uneasy; this wasn't delivering what we knew an Ambisonic playback system could. Eventually one person was brave enough to stand up and say so; we were hurriedly offered a cup of coffee and the system was taken apart and checked. It transpired that of the four identical speakers chosen for the demo, one of them had one of its drives wired back to front. That was enough, for several of us, to wreck the reproduced image, while for others it apparently made no difference. Remember that these were all experienced audio pros.

Discuss...

The fact that some people like certain colour combinations that others consider to clash, and that Marmite can revel in the polarisation it causes, suggests that in every sensory area our systems are probably conveying completely different impressions to us. If this is true of hearing, then it makes the whole subject of monitoring even more of a subjective quagmire than it already is. If we all hear such different things, if we are all sensitive to different aspects of sound, then the trade-offs and compromises inherent in loudspeaker design will have different impacts on different people. We take it as a given that there's no such thing as a perfect transducer, and that engineering a loudspeaker simply means making the best fist of it that one can among the minefield of interacting variables; it seems to me possible that improving one aspect at the expense of another will make a speaker sound 'better' to one person and 'worse' to another.



The X-Ray of Sound: ADAM's X-ART

Due to several technical inventions at the heart of the matter, the products of the Berlin-based company have instantaneously proved to be amongst the best tools available in professional monitoring.

State of the ART!

ADAM Studio Monitors are one of the finest audio reference monitors available today. ADAM's proprietary ART transducers overcome many of the core problems (e.g., little impedance, bad dispersion, low efficiency, etc) of conventional technologies. They take a completely new approach to the kinematics of moving air, resulting in a dramatic improvement in the quality of audio reproduction.

Construction

The ART membrane consists of a pleated diaphragm in which the folds compress or expand according to the audio signal applied to them. The result is that air is drawn in and squeezed out, like the bellows of an accordion.

Velocity Transformation

Whereas all other loudspeaker drive units act like a piston, moving air in a 1:1 ratio with regard to the motion of the driver, the ADAM ART design achieves an improvement in air loading by a factor of four over conventional transducers. This markedly superior 'motor' is responsible for the unprecedented clarity and pristine transient reproduction that can be heard with the ADAM ART drive units.

X-ART at a Glance:

"By employing the ART technology for the reproduction of the middle and high frequencies, the manufacturer from Berlin has set himself worldwide at the forefront of what is possible in highest quality reproduction." (HardBeat 06/2007)

- **Velocity transformation 4:1**
- **Extremely high efficiency (approximately 96dB/W/m)**
- **Perfectly linear impedance (3.2 ± 0.03)**
- **Extremely flat phase response (within ± 1.5°)**
- **Excellent directivity characteristics**
- **Power handling capacity up to three times that of 1" domes**
- **Perfect magnetic shielding**

New X-ART Tweeter

The new X-ART ('X' for eXtended frequency response) tweeter's fundamental principle is the very same as ART but with a 4dB higher efficiency, a 3dB higher maximum sound pressure level, and an increase in frequency response up to 50kHz.

The result is astounding: a clarity, airiness, and precision in the high frequencies that was not possible before. With the X-ART tweeter, ADAM reinforces its commitment to offer the best transducer systems currently available at any price.

The New SX-Series

All models of the brand new SX-Series feature the X-ART tweeter. The SX-Series is based on the highly acclaimed S-Series. However, it is not a simple revision of existing models but a fundamental transformation with no details having been overlooked, and every sound crucial aspect has been evaluated. All transducers, drivers, and electronics have been redesigned. The result is much more than an improvement, it is a quantum leap in professional monitoring.

New A/B Amplifier

The newly designed broadband A/B amplifier has been developed by ADAM to perfectly match the needs and capabilities of the X-ART tweeter. It shows ultra low distortion figures together with an excellent damping factor. An internal bandwidth of more than 1MHz is externally limited so that the unit delivers an ultra wide response up to 300kHz. With nothing limiting the talents of the X-ART tweeter, the monitor has unsurpassed clarity and openness, which will please, amaze, and thrill even the most experienced professional ear.

New HexaCone™ – Woofers

HexaCone™, as used in ADAM's SX-Series, is far more rigid than paper, polypropylene, or aluminum devices of similar dimensions. Due to this rigidity, break up resonances in the diaphragm cone are prevented.

The woofers in all models of the SX-Series are designed with larger and longer voice coils that deliver more linear excursion for higher SPL max. values. A stronger magnetic structure is added as well for an optimum in efficiency and accuracy.

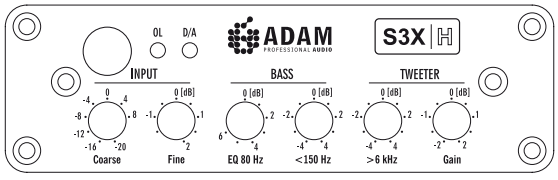
All models of the SX-Series use PWM (Pulse Width Modulation) for both the amp and the power supply section of all woofers/subwoofers combined with state of the art input and filter sections to achieve the best in multi-channel active studio monitoring.

New, Highly Sophisticated Control Panels

ADAM has developed an innovative front panel with six sophisticated controls.

Input sensitivity is handled by two controls. One control allows for coarse settings (-20dB to +8dB), while the second is used for fine-tuning in 0.5dB steps, ranging from -1.5dB to 2dB.

There are two controls for the lower frequencies. One is an equaliser at 80Hz that boosts bass response sometimes



Control Panel S3X-H

desirable in popular music. The second is a shelf filter that allows the engineer to alter the frequencies below 150Hz.

High frequencies can also be adjusted by two different controls. The first alters the high frequency volume (-2dB to +2dB), while the second is a shelf filter for frequencies above 6kHz. Both the high and low shelf filters can raise or lower ±4dB progressively within their frequency band.

A7: The Best-Reviewed Monitor Worldwide?

The A7 is an active two way nearfield monitor matching the ART tweeter with a state of the art 6.5" woofer that introduces a new cone material (Rohacell/carbon fibre) which combines high rigidity and high internal damping with low weight, resulting in an extremely accurate monitor with all the clarity, detail, and spectacular imaging traditionally associated with the ADAM name.

The A7 is powered by two 50W amplifiers (one per driver). The front panel sports both a power switch and volume control, while the rear panel houses controls for tweeter level and two shelving filters for high and low frequencies.

The unit also features both balanced (XLR) and unbalanced (RCA) input connectors, allowing it to be used in almost any audio application.

ADAM A7

Well over two dozen different magazines have reviewed the multiple award-winning A7 and every single review was nothing but a paean of praise. Here is only one example: "With their precise and clear sound, the A7s are hard to beat as stereo or surround monitors for small rooms." (*Mix*, 01/08).

S3X-H: The Legend Continues

The S3A is one of ADAM's most famous models and is found in many of the most prestigious recording studios all over the world. *Tape Op* applauded: "The S3A is the best nearfield or midfield monitor that I have ever heard." The successor of this monitor-legend is the S3X-H, a monitor second to none within its size and price point.

ADAM S3X-H

Unlike the S3A, the new X-model incorporates a 4" HexaCone™-midrange as part of the redesigned construction to further improve the musically most important midrange. This new design provides more detail with improved radiation characteristics, while presenting a musically coherent sound.

To produce deep, tight bass, both woofers now work within the same frequency range and radiate symmetrically. This allows for a problem free installation in any multi-channel application.

S7A Mk2: The Reference

With the S7A Mk2 we proudly present a unique combination of ADAM's proprietary transducer technology, modern PWM amplifier design, a highly sophisticated control panel, and an advanced d'Appolito speaker alignment, resulting in a main monitor meant to analyse the details of every kind of music to a degree not known so far. It features a whopping 1500W of onboard power (rms), reaching peaks of about 128dB (1m), two 15" subwoofers, two 9" HexaCone™-midwoofers, two ART midrange units, and one ART tweeter.

The S7A Mk2 is the benchmark of what is possible in state of the art full range active professional monitoring, today. It incorporates all of the ADAM inventions and designs, as well as the best materials available. This fusion of power and capacity with precision and accuracy results in unparalleled performance in professional monitoring.

When Only The Best Will Do

A small selection of ADAM users:

Elliot Scheiner, Chuck Ainlay, Bernie Kirsh, Danny Elfman, Dennis Sands, Kevin Killen, David Schiffman, Thom Russo, Timothy B. Schmitt, Scott Spock/The Matrix

A small selection of studios using ADAM:

Abbey Road, 20th Century Fox Digital, Paramount, Jazz At Lincoln Center, Blackbird Studios, Masterfonics, Circle House, Soundelux, The Juilliard School, The Lodge, Mozarteum Salzburg

ADAM S7A Mk2

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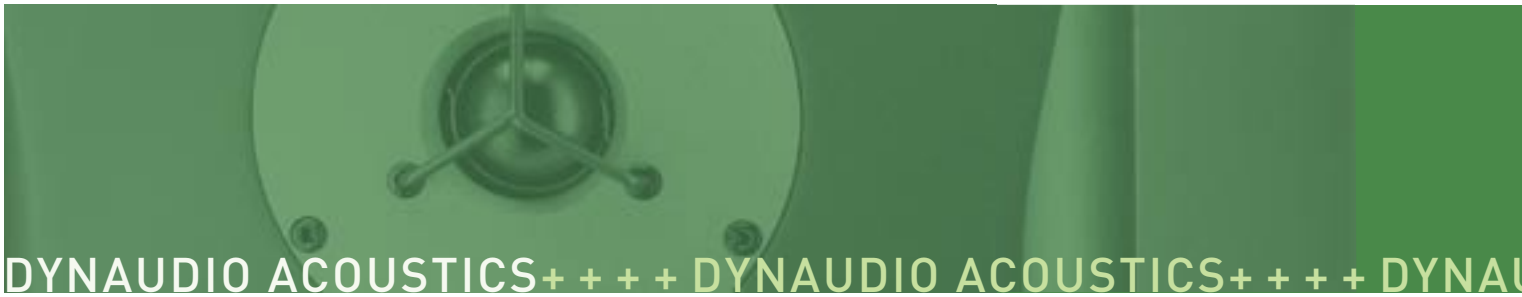

The Truth, The Whole Truth, And Nothing But...

Dynaudio Acoustics monitors are designed to speak the truth. You get exactly what you need for your mixing – an exact reproduction of your mix – no more, no less.

Superior Tools For Critical Monitoring

In film, post, gaming, broadcast, and music productions, consistency, predictability, and reliability are key. Add to this networkability and central control, and you'll know why studios throughout the world rely on Dynaudio Acoustics technology.

Choosing Dynaudio Acoustics, you not only get 20 years of innovative speaker and driver technology thinking. You also get integrated TC Electronic digital signal processing. This combination offers you the best of both worlds, making Dynaudio Acoustics speakers second to none.

Two Main Ranges – One High Standard

Clarity and consistency come as standard – the question is, how versatile do you want your setup? Dynaudio Acoustics markets two extensive ranges of DSP powered and analogue near-field and mid-field monitors.

AIR

It makes great sense to compare the AIR sound with any other speaker you own or consider acquiring. We both encourage and support this. Contact your dealer or our representative in your country to arrange a demo.

Bear in mind though, that an AIR System is not really comparable to conventional monitors. On top of ultimate precision and sound, an AIR system offers flexibility and convenience previously unknown in monitors. Achieving similar functionality and features from conventional monitors requires the addition of a number of external boxes such as Monitor Matrix Controller, Bass Management Crossover, external EQs and Delays. This obviously adds to the system price, and moreover often degrades the signal path. With an AIR System everything is integrated and matched – it's right there for you to use from the menu on the front of a Master-Module speaker via a 32-segment LCD display, or through an optional dedicated hardware remote, or an optional dedicated software application (Mac and PC). The user interface allows for storing and recall of factory and user presets taking into account THX and Dolby recommendations, reference levels, LFE sensitivity, and so on.

AIR 12

Powerful Two-Way Nearfield Speaker – 8" Woofer And 1.1" Soft Dome Tweeter

The latest addition to the AIR family. AIR12

suits all sizes of control room and OB vans, and its high precision amp/driver system (+/- 0.2 dB accuracy) ensures complete consistency with the entire AIR family in a variety of stereo and 5.1 setups – remote controllable via the AIR Remote or the included Air Soft application. DSP room adaption allows for perfect customisation for any room construction and its inter-monitor level calibration feature ensures consistent levels in all sessions.

AIR Soft

This MAC and PC compatible remote application allows central real-time control of AIR system parameters such as volume control, reference level, presets, and setup. AIR Soft is included with all AIR monitors.

AIR Remote

AIR Remote provides instant access to the AIR system volume, independent of your DAW or computer. Additionally, AIR Remote features one-touch operation of system reference levels, preset recall, and solo/mute status for each monitor.

The calibrated volume knob of AIR Remote allows accurate level setting, perfect tracking, as well as calibrated loudness for any AIR setup. The AIR remote is powered through TC-Link of any AIR monitor.

BMC-2 – How Pro Can You Go?

BMC-2 is TC Electronic's latest digital audio conversion and monitor controller. With it you can enjoy the luxury of

controlling your audio levels at all times and during unexpected drops or computer crashes. It also offers digital inputs, iCheck (to check audio compression), and calibrated listening for headphones and active speakers.

BMC-2: your pro DAC and monitor control!

AIR PC-IP

The optional PC compatible advanced Installer's Package provides access to virtually any AIR system parameter. This includes 4-band parametric EQ in each monitor, placement delay, preset control and more. PC-IP access to advanced bass management features independent HP/LP crossover frequencies as well as phase and polarity control of any AIR subwoofer. Additionally, PC-IP allows the installer to control system access via individual parameter securing, preset protection, and UI locking.

THX Certified

AIR monitor systems are THX certified for use in PM3 rooms.

Award-Winning Speaker Technology

Don't just take our word for it. Over the years, Dynaudio Acoustics monitors have won numerous prizes and awards.

AIR 12
- 2009 Remix Technology Award in the Monitor/Speaker category

BM 12A
- 2008 Remix Technology Award in the Monitor/Speaker category

BM 6A
- Future Music's Gear of the Year 2001 Award
- Future Music's Platinum Award 2001

BM 6A mk II
- Electronic Musician 2008 Editors' Choice Award in the Monitor Speaker category
- 2007 TEC Award nomination in the Studio Monitor Technology category for Outstanding Technical Achievement

AIR series
- Producción Audio – for Best Studio Product of the Year 2003
- m.i.p.a. 2003 Award in the Nearfield Studio Monitor category

Recognition like this goes to show that great products can help produce great art, as Dynaudio Acoustics monitors are used by the most demanding studios, engineers, producers, and production environments throughout the world. The list counts:

- Apple Audio Labs, Cupertino/California and Paris/France
- BBC Radio & Music, London, UK
- Danish Broadcasting Corporation, Copenhagen, DK
- Vienna Symphonic Library, A
- Paragon Studio, Nashville, US
- AIR Studios, UK
- Half HP Studio, JPN
- Sony DVD Center Europe, A
- Abbey Road Studio, UK
- ESP Studio, JPN

...and many more.

BM

The BM monitors – both in their passive and active forms – are clean, powerful, and accurate monitors where excellent results are easily achieved. The sound is always transparent and crisp ensuring the most realistic listening conditions for a wide array of applications. Comprised of renowned Dynaudio driver technology, these monitors have become the standard when it comes to high performance and transparency. In combination with the subwoofers, the BM series is also very well suited for multi-channel facilities.

BM 5A

Two-Way Active Nearfield Monitor - 6.9" Woofer And 1.1" Soft Dome Tweeter

The BM 5A monitor is a further development of the BM series and our engineers have put great effort into the design and fine-tuning of the BM5A, using the latest Dynaudio Acoustics technology. The monitor is extremely well suited for music monitoring and mixing, broadcasting, OB vans, edit suites, playback suites, and project studios. This high-performance monitor comes in a very compact design.

Level Pilot – Monitor Level at Your Fingertips

Level Pilot is a stylish, high-resolution volume solution that fits into any active speaker setup quickly and easily and with a minimum of clutter and wires. This results in convenient and high-precision control over your levels where you would ideally want it: right at your fingertips. Whether you are a passionate hobbyist recording in your bedroom, a musician with a small home studio setup, or working at a pro recording facility, Level Pilot makes sure the volume is always exactly where you need it, when you need it.

dynaudio acoustics
IF IT'S THERE - YOU'LL KNOW IT

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Listen to Your Music, Not to Your Speakers

These few words embody the philosophy of Focal Professional, the French manufacturer of acoustic loudspeakers and transducers. From their very beginning on the drawing board in Research & Development at Focal Professional, the studio monitors are designed to deliver one thing, at any cost: the absolute acoustic truth.

Focal Professional established itself as an innovative leader in pursuit of a unique principle: total control of development and production. This enables the company to constantly progress, while being sure there's perfect control during the manufacturing process. Focal Professional has registered many patents, such as the 'W' composite sandwich cone and the pure Beryllium inverted dome tweeter. These exclusive technologies have brought major progress to the professional audio world in terms of neutrality, definition, and precision in reproduced sound.

It's fundamental for a sound engineer to entirely trust what he or she hears. Our products are designed from the start to be professional tools that exactly reproduce the sound signal, without improving or damaging it. Focal Professional monitors guarantee the reproduction of all the micro-detail, the precise staging of instruments and voices, with no colouration or distortion. These basic elements allow the engineer to directly access the source equipment and electronics and ensure optimum transfer quality onto public audio equipment.

Focal Professional Exclusive Technologies

The 'W' Composite Sandwich Cone

Focal Professional has been developing composite sandwich membranes for the last 15 years. The fruit of that research, the 'W' structure (glass/foam/glass) used in every Focal Professional product, allows for a truly optimised response right from the start – thanks to the precise control of rigidity, weight, and damping capacity of the cone. The balance between these three fundamentals and often contradictory parameters is the very basis of the exceptional sonic neutrality of our speakers.

The Be Tweeter

Since the very beginning, Focal Professional has favoured inverted dome tweeters, but the introduction of the pure Beryllium dome, capable of covering five full octaves from 1,000Hz to 40kHz, has simply revolutionised high frequency spectrum reproduction. This tweeter's capacity to go as high as 40kHz without any artifacts enables it to reproduce high frequencies with unmatched speed and transparency. At first the pure Beryllium tweeter was only available with the very high-end, digital speakers of the Focal Professional lines (SM11), but now is also featured on the SM6 series, allowing an unprecedented price/performance ratio.

The Focal Professional Monitoring Range

Looking for the Ultimate Tool

CMS series

The CMS line is the latest arrival in the Focal Professional range, and is particularly dedicated to postproduction studios, small listening rooms, radio studios, and home studios. The CMS 50 received the MIPA award at Musikmesse 2009, where more than 100 journalists from 100 pro audio magazines awarded the CMS 50 as the Best Studio Monitor of the year.

CMS 50

Two-way, analogue professional nearfield monitor (80 + 50W RMS class AB), 5-inch (13cm) 'Polyglass' cone driver, 1-inch Aluminum-Magnesium inverted dome tweeter. Frequency response (+/-2dB): 55Hz-28kHz. Max SPL @1m: 107dB.

CMS 65

Two-way, analogue professional nearfield monitor (100 + 60W RMS class AB), 6.5-inch(16.5cm) 'Polyglass' cone driver, 1-inch Aluminum-Magnesium inverted dome tweeter. Frequency response (+/-2dB): 45Hz-28kHz. Max SPL @1m: 112dB.

SM6 series

The now famous SM6 series has been developed for professional engineers who are seeking the absolute neutral sound and sound stage précision for recording, mixing, and mastering studios. The SM6 series is composed of three references: Solo6 Be, Twin6 Be, and Sub6.

L PROFESSIONAL+ + + + FOCAL PROFESSIONAL+ + + + FOCAL PROFE

They Chose Focal Professional...

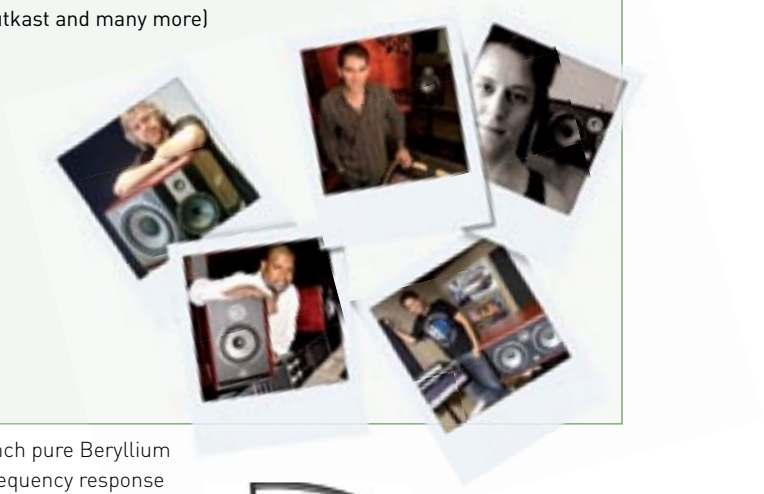
The SM-11 is the first speaker that doesn't colour the sound at all. I can hear every 1/2dB of equalisation over the whole frequency spectra in the SM-11, it's simply my most valuable tool.
Dragan Tanaskovic
(E.S.T, In Flames, Anders Persson trio)
Studio Bohus Sound (www.bohussound.com)

While listening to my favourite recordings on a pair of Solo6 Bes, I heard instruments and parts that I had not heard before. Wow. The music sounds very real, in the room. It doesn't seem like you're listening out of speakers, the music fills the room. You can imagine a band in front of you. It doesn't seem like there are speakers between you and what you're listening to. Very few speakers do that.
Ian Boxill
(Prince, 2 Pac, Quincy Jones)

I needed self-powered monitors and wanted a set that didn't require a subwoofer, a monitor that had a natural top to bottom, but no hyped frequencies. I definitely get enough low end with the Focal ProfessionalS – the balance with the Focal Professional Professional monitors is perfect! With the Focal Professional Professional monitors you can hear everything.
Steve Ouimette
(Guitar Hero ®)
www.steveouimette.com
www.hub.guitarhero.com
www.myspace.com/steveouimette

The Twin6 Be monitors are the best that I've used in terms of studio-to-consumer listening translation. They really translate: what I hear in the studio is what the outside world hears, in my experience. The Twin6 Be is the first powered monitor that I've heard that you don't have to be afraid of hearing in the mid-range. Listening back to mixes I've done on the NS10s through the Focal Professional Professional, it kind of scares me because I hear top-end distortion that I wasn't hearing in the NS10s ; I was so used to using them, I thought I knew them. With the Focal Professional Professional there wasn't a learning curve, it actually spooked me at first.
Jeff Juliano
(James Blunt, John Butler)
www.myspace.com/jeffjuliano

Forget all about my gear and toys, the most critical element in my studio is my loudspeaker... To me, there's no better nearfield loudspeaker than the Solo6 Be, whatever the prices of other monitors.
David Kutch
(Alicia Keys, Natasha Bedingfield, Al Green, Erykah Badu, Estelle, Outkast and many more)



Solo6 Be

Two-way, analogue professional nearfield monitor (150 + 100W RMS Bash® technology), 6.5-inch(16.5cm) 'W' composite sandwich cone driver, 1-inch pure Beryllium inverted dome tweeter. Frequency response (+/-2dB): 40Hz- 40kHz. Max SPL @1m: 113dB.

Twin6 Be

Three-way, analogue professional nearfield/ midfield monitor (2x150 + 100W RMS Bash® technology), 2x6.5-inch(16.5cm) 'W' composite sandwich cone driver, 1-inch pure Beryllium inverted dome tweeter. Frequency response (+/-2dB): 40Hz- 40kHz. Max SPL @1m: 115dB.

Sub6

Analogue subwoofer (1x350W RMS Bash® technology), 11-inch 'W' composite sandwich cone suwoofer. Frequency response (+/-2dB): 30Hz-250Hz. Max SPL @1m: 116dB.

In quest of the optimum solution to export the sound material from a digital console with an outstanding clarity and transparency: discover SM11, our professional digital monitoring series on www.focalprofessional.com.

FOCAL PROFESSIONAL

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For a complete list of distributors:
w www.focalprofessional.com

Choosing Nearfield Monitors Should Be Easy

After all, they only have one job to do. The job of monitoring. Not enhancing, not diminishing, not in any way altering the source material.

PM Series MkII

The PM-Series MkII offer exceptional audio performance matched to jaw-dropping good looks at an affordable price. Fostex strives to design and build studio monitoring systems that enable you to experience your unique sound in all its dimensions. And through tireless research and development, endless measurements and real-world listening tests, Fostex's engineers have achieved this in the form of the beautiful second generation PM-Series.

Capitalising on Fostex's supreme knowledge of acoustics and speaker engineering, and now offering a brighter, tighter sound, these studio monitors are designed inside out to provide the best monitoring experience, with minimal resonance, sparkling highs and rich, deep lows. And, with new 'high-gloss' front baffles, they look as stunning as they sound.

PM Series Group

PM-2 MkII

Created for larger rooms, the PM-2 has the power (240 watts of bi-amped power actually) and sophistication and, most importantly, the versatility to handle the most demanding recording applications. Equipped with a 200mm low frequency unit and remaining natural and transparent right across the audio spectrum, even at high sound pressure levels, the PM-2 is great for today's bass heavy music.

PM-1 MkII

Perfectly proportioned and offering the type of clear-transparent sound that singles out a great speaker, the PM-1 is capable of producing extremely high SPLs accurately across the full audio spectrum. With 120 watts of bi-amped power and a bass response that's full and dynamic, and a crisp high-end that sparkles with vitality, the PM-1 delivers the type of sonic quality that's usually the domain of monitors costing thousands.

PM0.5 MkII

The ideal choice for smaller studios requiring nearfield monitoring, the perfectly formed PM0.5 MkII offers 70watts of bi-amped power and produces great full range performance with exceptional neutrality even at high sound pressure levels.

The compact dimensions also enable accurate placement in confined or awkward spaces, with the dispersion from the two way ported enclosure design tailored such that it will deliver a superb sound almost regardless of room acoustics.

PM0.4

The ultra-compact PM0.4 now completes the lineup of the reputed PM-series ranging from 4" to 8" woofer size. PM0.4 is naturally recommended for desktop use but its superb audio performance in compact physical size expands its applications to professional console top studio monitoring, audio installation, as well as portable audio monitoring.

PM0.5-Sub MkII

Designed ideally for use with the PM0.5 MkII, the 110watt, 200mm driver PM0.5-Sub produces precise, low frequency reproduction and an excellent deep bass output. Easy to set-up (just a single gain control and phase reverse switch), the combination of a pair of PM0.5s and PM0.5-Sub provides superb sonic quality at an affordable price. Recommended for use with PM0.4.

NX-5A

NX Series

Want to take your recording experience to a whole new level? The NX-Series Powered Nearfield Monitors for Professional Recording Environments are like nothing you've heard before. But don't take our word for it. When choosing nearfield monitors for your studio you really ought to evaluate as many different speakers as you can

before a decision is made. After all, how else are you going to realise that your sound is best handled by a pair of Fostex NX-Series Monitors?

Listen to a pair of powered Fostex NX Series reference monitors and you'll discover a superb natural sound with little colouration, deep tight lows and crystal clear highs, precise stereo imaging and an almost complete lack of distortion – even at high sound pressure levels and including those subtle low frequencies.

Full of the latest in speaker technology and designed from the ground up for critical listening in both professional and project studios, broadcast and editing suites, or any other recording facility where a precise, transparent, professional sound is essential, the NX Series set new standards in sonic accuracy and packaging.

NX-6A

Excellent stereo imaging across the sound stage and an ideal response throughout the frequency range. Magnetically shielded drivers and a compact size allows easy placement close to all types of video, audio and computer devices, while the sonically pure and transparent sound, free from harshness and unwanted colouration, makes it ideal for all extended critical-listening sessions.

NX-5A

Created to offer a professional nearfield monitoring solution in tight spaces, the compact NX-5A excels in just about every department. The sound is full of clarity and audio accuracy, the stereo imaging is sharp and consistent and the level of sonic detail is incredible from a monitor so small.

PM0.4 Now Also Available In White

Nearfield Studio Monitors

- **The LF drivers of PM-2 MkII: 8" (200mm), PM-1 MkII: 6.5"(160mm), PM0.5 MkII 5" (130mm), PM0.4 4"(100mm) have been developed to obtain extremely pure music reproduction by employing the latest technology in cone material.**
- **The cone uses a mixture of cut and milled fibres that are made from aromatic polyamide. It is then impregnated with resins to simultaneously achieve high rigidity and optimum damping.**
- **The cone also has an olefin film thermally adhered to its surface to control frequency response and to establish long term reliability.**
- **The center dust cap is made of non-wood cellulose material and is also impregnated with resin.**
- **The voice coil is made of super high purity copper wire to achieve extremely low distortion.**
- **The 25mm or 20mm soft dome tweeter employs Fostex's UFLC technology (Poly Urethane Film Laminated Cloth) to achieve light weight and high stability performance.**
- **The amplifiers are precisely calibrated to match the performance capability of the drivers.**

NX-Series

Nearfield Studio Monitors

- **5" (130mm) or 6.5" (160mm) with HR (Hyper Radial) diaphragm for LF unit which utilises the latest diaphragm 'Radial Papermaking Technology' for natural and smooth sound reproduction.**
- **UDR (Up/Down Roll) Tangential driver edge eliminates the unwanted resonance.**
- **Wide-range 20mm hard dome tweeter with pure magnesium diaphragm to eliminate sharp-edge sound characteristics.**
- **Highly rigid cast aluminum frames for both LF and HF units which minimises unwanted vibrations and resonances.**
- **Magnetically shielded drivers allow for safe placement close to a video monitor.**
- **Time-aligned front baffle enclosure design with the HF driver recessed for a precise and pure sound.**
- **Bi-amplifier. Dedicated 60W (LF) + 40W (HF) bi-amplifier eliminates electric interference between the drivers**
- **Overall output level control & dedicated tweeter level control, LO EQ control.**

The Truth

Now the choice can be made. Monitors which may make you sound good, or monitors which tell you how good you sound. Hooking up a pair of Fostex's NX-Series or PM-Series Montors for the first time is somewhat of a revelation. You may be surprised at what you hear. But at least it will be a true representation, free from any sonic colouration and distortion. Which is where Fostex comes in.

Fostex®

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w www.fostex.jp

Decoding The DNA Of Sound

Since 1945 Klein + Hummel has been setting global standards in sound reproduction. For over 40 years K+H has focused on the professional market by developing precise measuring instruments – tools to analyse sound and detect the tiniest aural nuances.

7.1 High Definition Bass Management™

The 7.1 High Definition Bass Manager™ is compatible with all standard consumer formats from mono through to the latest 7.1 HD systems. Eight channels of analogue or an optional 8-channel, 24-bit, 192kHz digital input card ensures flexible interconnectivity for modern studios. Four-mode LFE-channel processing guarantees compatibility across all formats and industries. Bypassable 80Hz forth-order crossovers offer compatibility with consumer replay systems, and flexible acoustical controls (consisting of output level, low cut, a parametric equaliser, and an eight-position phase control) allow for seamless system integration. Built-in volume control and a hardware remote control allows for centralised system control independent of the source, and the electronics can be remote located to reduce cabling. Finally, there is integrated electronic limiter for amplifier, driver protection, low heat dissipation amplifiers, and the electronics can be remotely powered on with two modes of operation (0 V and 12 V trigger).

O 810, with 7.1 High Definition Bass Manager™

K+H products are designed to be used in music, broadcast, and post production studios for tracking, mixing, and mastering. They can be mixed freely to make large multi-channel systems. Klein + Hummel specialise in three-way systems, but have recently launched a range of subwoofers. Below we explain some of the thoughts behind our designs.

The Goal: Accurate, Absolutely Uncoloured Sound

Our aim with the O 300 was to strive for nothing less than perfection in developing the best compact active reference monitor possible, with accurate, uncoloured sound, superb transient response, and ideally shaped waveguides. The O 300 is a monitor that draws upon all of Klein + Hummel's years of experience in monitor design (see "Progress built on tradition" box-out), and has been fine-tuned through extensive computer simulations and countless listening tests. The three-way design makes this loudspeaker system extremely precise and revealing of detail, thereby enabling the mixing engineer to make critical judgments with supreme confidence.

Exact Localisation And Extraordinary Sense Of Space

A dense, low-resonance material called LRIM™ is used to mould the waveguides directly into the baffle for optimal dispersion. The elliptical shape reduces the early reflections off the console surface, which would otherwise interfere with the direct sound from the loudspeaker. At the same time, the effective horizontal listening area is made wider, giving the recording engineer greater freedom of movement along the console. The use of LRIM™ has also made it possible to align the acoustic centres of the two drivers exactly on one plane, thereby preventing time and phase coherency problems at the crossover frequencies. This allows the individual drivers to work together perfectly to produce a precisely detailed soundstage.

O 300, Compact 3-way active monitor

Superb Sonic Qualities

The three magnetically shielded drivers use the latest materials and acoustical design techniques to accurately reproduce the input signal at high levels and with low distortion. The excellent transient performance is particularly noticeable, as is the stereo

imaging. The design is especially suitable to reproducing the human voice with great clarity, and the tweeter has an exceptionally low distortion performance. The flexible acoustical controls permit a good sound quality even in less than ideal room acoustics.

Each driver is powered by a high-performance amplifier that is exactly matched to the driver's technical requirements. Precisely tuned electronic crossovers help provide proverbial operational reliability and high amplifier output with minimal distortion. The monitor is equipped with sophisticated protection circuitry to protect the drivers from thermal overload or if a power amplifier runs the risk of overheating.

The monitor stands out not only for its sound but also for its attractive, modern design, and has received an international design award.

Customers Demand More

The O 410 represents the latest incarnation of the many technologies pioneered by Klein + Hummel during the last 40 years. Engineering excellence applied to all aspects of the O 410 design brings a new benchmark in audio reproduction quality. A waveguide featuring Mathematically Modelled Dispersion™ (MMD™), flexible acoustical controls, various input options, and an extensive mounting hardware range allow the O 410 to be used in diverse acoustical conditions, with any source equipment, and in a wide variety of physical locations.

O 410, 10" Three-way, New in 2007

With a higher output than the O 300, the O 410 has been designed for use as a mid-field or main monitor. The O 410 can be used free-standing or flush mounted into a wall, and, in multi-channel systems, can be mixed freely with other loudspeakers in the Klein + Hummel range.

Progress Built On Tradition

In 1945 Horst Klein and Walter Hummel founded a company to develop the perfect devices for perfect sound reproduction. They assembled a team of specialists near Stuttgart: a team that has developed premium products for over sixty years. Since then, K+H has shown an unwavering pioneer spirit in achieving perfect sound reproduction. During this time the age of High Fidelity started, and it was realised that there was a demand for equipment that was meant to be the best. K+H was in a position to satisfy this demand as it had a company philosophy of designing products with perfect sound and product quality. Some of the pioneering designs were the world's first active loudspeaker "OY" (1967), the first German ELA amplifier (1958), and the "DELTA-8-Beschallungssystem".

Today Klein + Hummel creates the most modern studio and installation products, incorporating innovative solutions, manufactured with unquestionable quality, and with a deep commitment to continuing a long tradition of innovation. The name, products, and reputation live on as a part of the Sennheiser Group, which also consists of Sennheiser, Neumann, and Sennheiser Communications. A truly international marketing, sales, support, and service network ensures quality of delivery no matter where the products are used.

Subwoofers Become More Sophisticated

As consumer technology advances at ever-faster rates, professional technology increasingly finds itself trying to keep up. An example of this is the advent of Blu-ray and other high definition formats that have increased the audio channel count to 7.1. The O 870 and O 810 are an answer to these new demands by offering a new 7.1 High Definition Bass Manager™ (see box-out). The latest amplifier technology and acoustical components have been used to ensure the most accurate sound reproduction possible. Robust drivers, a rock-solid cabinet, and carefully designed ports guarantee a tight, articulate, and distortion-free low frequency reproduction, even at high replay levels. Using the sum output, Plane Wave Bass Array™ (PWBA™) techniques acoustically improves lateral consistency in the listening area. The bass extends down to 18Hz. The O 870 and O 810 subwoofers are designed to complement Klein + Hummel's extensive range of monitors, and can be used on their own, or daisy-chained to make larger systems capable of higher SPL.

O 870, 2 x 10" Subwoofer

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KRK Systems, Inc. – Focused on Monitors, Mixing, and Studios

At KRK, the focus is on the mix. From the company's successful Rokit line to its acclaimed E8B, KRK is a dominant force in studio monitoring. Here is a look at the art and technology that drives the company.

VXT6, VXT8, and VXT4.

KRK is one of the leading studio monitor manufacturers for home, project, and commercial recording facilities. The company pioneered active monitors, introducing matched speakers and integrated power amplifiers to the pro audio market. Recently the product lines have evolved to include several new design elements that improve performance and put KRK at the top of any monitor search.

Rokit™ – The Industry Standard Keeps Getting Better

The Rokit line is the world's best-selling line of studio monitors,* and for good reason. All of the models have a clean, accurate sound that enables users on a small budget to get high calibre results. Rokits are well suited for small to mid-sized home and project studios. The Rokit 5 and Rokit 6 integrate easily into small recording and mixing spaces. The Rokit 8 provides higher SPLs required for mid-field monitoring or larger rooms, or whenever extended bass performance is required.

The latest incarnation, the Rokit G2, features a newly designed front baffle that sports the radical curved edges found on KRK's VXT and E8B monitors. These cabinet modifications reduce diffraction and give the Rokits a wide sweet spot and impressive imaging. The Rokit line also features one-inch neodymium soft dome tweeters with Ferrofluid for more natural-sounding highs and tight low-end response. The integrated power amplifiers and crossovers allow the Rokits to pack a surprising punch, while providing superior detail and transient response.

** According to MI Salestrak Data, 2007-2009*

Rokit6, Rokit8, and Rokit5.

VXT – The Mainstream, Professional Monitor

KRK's VXT Series is aimed squarely at semi-pro and professional users. Serious project studios, broadcast and editing facilities, post production and sound design all can benefit from the VXT's ultra-smooth frequency response and incredible imaging. The VXTs are constructed of ABS structural foam, which provides better density and dampening than wood. The ABS provides another benefit as it increases the interior cabinet volume. This allows the VXT series to have better bass response than similarly sized monitors while keeping resonance to a minimum. In addition to the custom Kevlar drivers, each VXT model features a one-inch soft dome tweeter

The KRK-10s.

and a toroidal power transformer for low hum and minimum noise. The inclusion of tamper resistant switch covers, integrated supports for wall or corner mounting, ground lift, optional front grilles, defeatable limiter and auto mute controls, and high and low frequency adjust switches on the VXT6 and VXT8 make the line suitable for installed applications. VXTs are perfect for edit bays and mid-sized project and professional studios. The VXT4's small size and impressive performance is ideally suited for applications where space is at a premium, while the VXT6 and VXT8 work well for near and mid-field applications in larger rooms.

Great Monitors + ERGO = Great Mixes

A great monitor plus a great room can yield a great mix. But if your mixes sound flabby, boomy, lack punch or detail, the problem could be room influences. KRK's ERGO fixes these problems by analysing your room and correcting for frequency and phase problems. The result is a room where bass buildup is contained, muddy mids are cleared up, and imaging is restored. ERGO also acts as a master volume control, speaker switcher, and audio interface. Since ERGO corrects poor acoustic environments regardless of their location or construction, it is the perfect complement to any control room, home, project, or broadcast studio.

KRK-10s – More Bottom For Rokit, VXT

The KRK-10s' subwoofer complements the Rokit and VXT monitors in both styling and performance. The 10" glass-aramid driver and high power amplifier effectively extend the frequency response of any monitoring system down to 35Hz. The KRK-10s has a level control, phase switch, and variable low-pass filter, and also contains the full complement of input options for easy interfacing with any KRK monitor.

KRK Exposé E8B

The flagship of the KRK monitor line, the E8B brings a level of sonic detail and accuracy to professional studios around the world. In both sound and presence, the E8B projects a 'no expenses spared' image. And one listen will prove this out.

The E8B's curved front baffle and wide radius edges reduce the diffraction effects for better imaging, while its non-parallel, internal walls help reduce chances of standing waves inside the cabinet. The thinnest point in the construction of the cabinet walls is one inch, and the size and heft of the enclosure gives the E8B a solid, almost monolithic quality. The E8B uses two discrete, 120-watt RMS Class A/AB power amplifiers. Its custom-designed HF tweeter is made of AlBeMet, a composite material comprised of beryllium and aluminum. This high-tech tweeter gives the E8B its remarkably open and airy high end. With the Exposé line, KRK built an avid fan base of top-tier engineers, producers, and recording studios. The E8B is sure to grow this base.

The KRK Exposé E8B.

KRK Design Philosophy Spells Success

There are several design elements that are shared across KRK's monitors. KRKs are easy to spot in recording studios around the world, thanks to their trademark yellow woofers. KRK products have distinctive enclosures, designed to minimise standing waves as well as to create a sleek look. All cabinet edges and port openings are heavily radiused to reduce diffraction, which results in improved detail and stereo imaging. KRK monitors also use slotted ports in the front of the cabinets (as opposed to the more common round port) to reduce air pressure inside the enclosure and to provide a more accurate representation of bass frequencies. Inside the box, KRKs feature a bi-amplifier design consisting of audiophile-grade components, and certain models contain limiter circuits designed to mitigate the negative effects of overdriving the amplifier or transducers.

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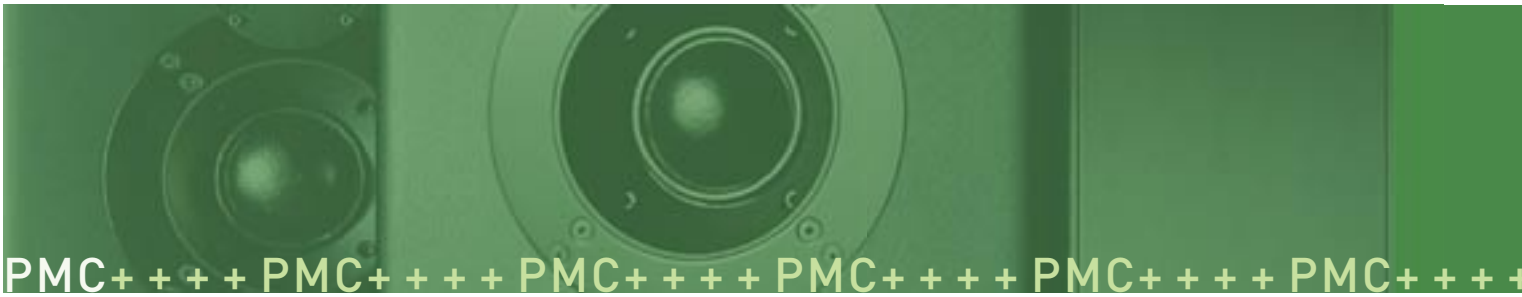

PMC – The Reference

PMC has placed monitors throughout the world's most superior facilities, demonstrating time and again its claim to be 'the world's reference monitor'.

Optimum Mastering – Bristol, Stereo MB2 XBD-A & TB2S+ 5.1 surround system

Introduction

PMC has become the industry standard for audio monitoring in the professional world. With superb stereo imaging and pinpoint accuracy from 5.1 surround sound systems, PMC monitors demonstrate an unparalleled listening experience. In the live broadcast arena PMC systems are in daily use for the BBC HDTV broadcasts, they are also responsible for the majority of premier 5.1 Audio for DVD Mastering. PMC is also highly regarded in the fields of post production and studio monitoring.

PMC monitoring systems are used in all genres of music and in all parts of the production chain, as well as in the home writing studio through to major studios and the final mastering of material for CD and DVD release. PMC is regarded as the ultimate critical tool for engineers and artists.

Flagship

The large active BB5-A and MB2-A range from PMC justly deserves the label of 'no compromise'. Every element has been designed and manufactured purely for its performance, and encompasses the smallest detail from individual cable choice through to hand selection of capacitors in the active crossover networks. This level of resolution cannot be achieved with standard technology and average tolerances. The large active range variants cover all requirements of the recording professional, and are not restricted by the intended type of playback material. The combinations allow for perfect integration into any sized room, with increased LF headroom available with the 'XBD' models.

BB5 XBD-A

Professional Tools

The DB1S-A is the smallest activated monitor from PMC with an unbeatable response down to 50Hz. Superb power handling and resolution make it the ideal nearfield monitor for stereo and surround. The larger activated TB2S-A has become a firm favourite amongst quality conscious broadcasters, post production, and smaller sized studios in either surround or stereo nearfield roles. The Activated IB1S-A is an extremely flexible three-way monitor, which has found its home in the most varied of environments. It's hugely popular in Hollywood film scoring and post production. The IB1S-A features wide dispersion soft domed fabric mid and high frequency units, the PMC 10″ carbon fibre and Nomex™ flat piston driver. This flat patented driver increases dynamic handling and eliminates distortion that may occur due to cone break up.

DB1S-A & TB2S-A

The IB2S-A is based on the hugely successful IB1S-A with one major change to the driver compliment. The addition of the PMC 75 large soft dome mid range unit increases the definition and clarity to the level of the larger monitors in the range with no increase in cabinet size.

IB2S-A

The AML1 is as far from a 'me too' product as could be imagined. The AML1 design is one of 'no compromise', and the only way of achieving this goal is to manufacture the complete device 'in house'.

Surrounded By Sound

PMC offers all its monitors configurable to 5.1, from the smallest activated system through to the biggest BB5 active rig, with a range of complementary subwoofers available. The DB1S-A and TB2S-A are compact, two-way activated monitor designs, employing unique technology in the form of PMC's ATL™ design and

History

Founded in 1990 by Peter Thomas of the BBC and Adrian Loader of FWO Bauch, the combination of knowledge and a life-long passion for the music led to the production of PMC's first product – the BB 5-A – an active main studio monitor. This design was snapped up by the BBC Maida Vale and Metropolis Mastering and remains the world's reference, used by Stevie Wonder's Wonderland Studio, Hospital HDT V Broadcast London, and for renowned classical labels such as Decca and Harmonia Mundi. Many of today's movie themes have been crafted using PMC.

PMC reigns supreme throughout the leading mastering houses, broadcasters, and much of the professional world. They believe a good loudspeaker should be able to relay the purest intentions of the artist without colouration.

Client List

Broadcast/Recording/ Mastering/Post

BBC TV
BBC Radio 1, 2, 6
BBC Maida Vale
Metropolis Studios & Mastering
Teldex, Berlin
Hospital HDTV Broadcast Studios
The University of Music, Düsseldorf
The Soundmasters
Fluid Mastering
Spirit Studios
Red-TX OBs
Moving Picture Company
Piccadilly Radio, Manchester
Capitol Radio, London
Emil Berliner/ Deutsche Grammophon
RTL
ORF
NFL (National Football League, USA)
TSR
Sony BMG
Formula 1
EMI
Universal Music Group
Dolby
Google
Digidesign
EMI
Siemens

Clients/Artists

Prince
Kraftwerk
Coldplay
Peter Gabriel
Ben Zander
Stevie Wonder
Robbie Williams
Brian May
Francis Rossi
Tori Amos
Underworld
Crystal Method
Tony Bennett
John Rutter

Film

Dennis Sands
John Debney
Hans Zimmer, Remote Control Studios
Trevor Morris

Philosophy

PMC's design philosophy is quite a simple one, to design the ideal monitoring solution with the highest resolution possible without colouration and distortion.

This supreme level of resolution is derived through unequalled R&D into (ATL™) Advanced Transmission Line Loudspeaker design and drive unit technology.

Also PMC's close association with principle engineers has allowed development of innovative solutions for the latest recording techniques and changing monitoring environments. The design team has a clear vision of what must be achieved, therefore all of the PMC range is voiced identically, from the DB 1S+ through to the BB 5 XBD-A. The balance is neutral and dynamic with wide dispersion, making image placement pin point over a huge listening window. The PMC user is one which is pioneering in their field, and will not settle for less than the best.

and newly developed proprietry amplification. A TB25.1-SA or DB5.1-SA surround monitoring system with the Active TLE1S handling the .1 effects channel is a potent and precise tool for the audio professional. These compact systems are currently in service with quality conscious post production, mastering, and broadcast fields worldwide.

TB2S-A 5.1 Surround System with TLE1S Subwoofer

PMC's ATL™ Technology (Advanced Transmission Line)

ATL™ has taken loudspeaker design to new levels, by using a cabinet construction and highly specified drive unit and crossover components. The PMC ATL™ design has enormous benefits compared to sealed and ported models available elsewhere. The main driver is placed at one end of a long tunnel (the transmission line), which is heavily damped with PMC's proprietary absorbent acoustic material. This material is exactly specified to soak up the upper bass frequencies, which radiate from the rear of the main driver. The lowest frequencies emerge in phase from the large vent at the end of the line, effectively acting as a second driver. The air pressure behind the main driver is maintained controlling the driver in a vice like grip over a wide frequency range, which eradicates spurious cone movement that would lead to distortion. The upper bass and midrange is entirely transparent as it is not masked by harmonic distortion residing in the very low frequencies, which is a feature of less sophisticated designs. ATL™ produces higher SPLs and lower bass extension than any other design of a similar size, even if identical drivers were used. The frequency response also remains consistent regardless of volume. Neither late night listening, nor prolonged monitoring sessions have to be conducted at high volumes to achieve maximum bass response – ideal for the home and professional alike.

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The Swiss Precision Active Monitoring Series: More Than A Black Box!

The philosophy of PSI Audio can be compared to Swiss watch designers. Our vision is to be globally recognised as pioneers in precision audio, combining innovation, creativity and technology.

Designed and manufactured at our Yverdon workshops in Switzerland, the latest generation of PSI Audio speakers is the culmination of 30 years of knowledge of materials and treatments, guided by a thorough understanding of acoustics.

The unique precision of PSI Audio monitors is a delicate mix between the passion, experience and know-how of electro-acoustic technology.

All of the product range takes advantage of our knowledge, and we strive to deliver the most coherent sound and design between all our models.

At the core of our speaker performance is an electronic design based on two exclusive concepts – CPR and AOI. This technology enables us to show people that PSI Audio is more than a black box.

CPR

The CPR system consists of multiple all-pass filters, each of which acts in a specific frequency range in order to obtain a wide area of Compensated Phase Response, generating a constant group delay.

Thanks to the CPR system, the position of the sound image is highly accurate. This technology allows the design of surround sound systems with different types of PSI Audio speakers that maintains an accurate phase response.

Practical Advantages of CPR, and Impact on Stereo Applications

The ear is very sensitive to group delays or phase irregularities of sounds. The human brain detects such irregularities easily and processes them into space related information such as positioning a sound source. All traditionally designed speaker systems suffer to a certain degree with such irregularities. These irregularities are the reason why some speakers produce a wider and deeper room perception that determines the reproduction of the sound image. The speaker system represents the reference tool of every sound engineer. An accurate transient response particularly helps the sound engineer during the fine tuning of the reverbs effects, or during the design of a specific sound and its position in the sound image.

As a sound recording passes through various processes (recording, mixing and mastering) in which various people, locations, and therefore speaker systems, will be involved, corrections may be applied due solely to phase irregularities that are not present on the actual recording. The PSI Audio speakers feature our unique CPR system that generates a Compensated Phase Response, removing such irregularities, generating a stereo image and projected room of extreme accuracy. PSI Audio speakers provide a more accurate and precise reference tool to the sound engineer.

CPR Impact on Surround Sound Applications

Traditional speaker designs have different phase responses, and therefore the phase inaccuracy phenomenon is worse in surround sound applications where room information and positioning have an even higher priority and a more critical part of the sound engineering process. This is one of the reasons why speaker manufacturers strongly recommend using speakers of the same type when creating a surround sound system. The CPR system by PSI Audio features an extremely accurate and superior surround sound image and a much improved working environment. One of the big advantages of the CPR system is also that for the first time a user can mix different types of PSA Audio speakers in a surround sound system, whilst maintaining perfectly accurate phase response. Not only will the PSI Audio surround system sound much more accurate, and therefore provide a superior working tool, but it can also introduce significant cost and space savings when investing in a new monitoring system.

Full PSI Audio monitors range. A225-M, A25-M, A21-M, A17-M, A14-M

AOI

The AOI system detects movement of the membrane and the moving coil, and processes them using counter reaction filtering. The damping rate is continuously

NEW: PSI Audio A214-M!

- Full symmetric dispersion
- Very compact
- Amazing SPL
- Swiss precision

The PSI Audio A214-M is mainly designed as a centre speaker for surround monitoring applications. However, the unit may also be used as a basic component for all monitoring requirements.

Thanks to its large dispersion, as well as its full symmetric construction, the A214-M is perfectly adapted to all situations where intelligibility and a wide spectrum are required, for instance as a centre speaker in surround systems.

PSI Audio A214-M

The A214-M employs two woofers of 147/104mm and one tweeter of 100/25mm, for a programme power-handling of 160W. The speaker has sufficient acoustical output to satisfy the requirements of post-production and film mixing suites, as well as for other mixing applications.

The low height of the A214-M (166mm) allows the speaker to easily be incorporated into surround installations where space is an important factor.

Contact us to test it: **www.psiaudio.com**

Key Technical Data:

Continuous Max SPL, 1m.	108dB (single)
Programme Max SPL, 1m.	119dB (pair)
Response at -6dB	53-23000 Hz
Tolerances	+/-2 dB (60Hz – 20kHz)
Distortions THD	‹1.2% (120Hz – 12kHz)
Cabinet Dimensions (WxHxDmm)	166 x 446 x 200

Company

PSI Audio is the brand name of Relec, a Swiss company specialising in high performance professional studio monitors. Since it was formed in 1977, Relec has developed a huge variety of speakers for Hi-Fi, PA, and Professional Studio applications, a large number of which are OEM products produced for respected international companies who label and market the speakers under their own brand names.

Many of these products have gone on to win the industry's most desirable awards, as well as being extremely enthusiastically received by the professional press. Today, PSI Audio has evolved into a worldwide brand, producing the ultimate in professional studio monitors.

adjusted in different frequency bands to match the position of membrane and coil. The AOI system allows the reproduction of sound without transducer colouring over the whole frequency range.

Practical Advantages

The PSI Audio speakers featuring the AOI system have superior impulse behaviour to traditional amplifier designs. Whilst the transducer travels to its intended position, the AOI circuitry seamlessly adapts the amplifiers output impedance to ensure ideal acceleration of the membrane to reproduce the desired impulse. Once the transducer reaches the end of the impulse, the AOI circuitry provides a break in order to act against an overshooting of the transducer. The AOI circuitry is almost capable of reproducing a square wave and therefore increases accuracy by marrying the transducer and the amplifier into a perfect couple. From our experience, a nice side effect of the AOI system is that the membranes of a PSI speaker do not produce parasitic sounds when other speaker systems in the room are in use. When air pressure changes due to other sound sources, the AOI will detect this and tighten the damping of its transducers in order not to produce parasitic sounds (sounds not present at the input). In today's times where much more importance is given to the low end reproduction of sounds, especially when using sub woofer technology in surround sound systems, the importance of a monitoring system that has an accurate, and not a flattering, reproduction becomes essential. As a result of the AOI, the PSI Audio speaker range has a highly accurate impulse behaviour, with a minimum of transducer coloration.

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Tannoy – a famous name with a proud heritage

Few companies' products have such a profound impact on our lives that their names enter the dictionary as generic descriptions for their inventions. In the audio field, Tannoy stands alone as a name synonymous with sound.

Few companies' products have such a profound impact on our lives that their names enter the dictionary as generic descriptions for their inventions.
There are notable exceptions such as Biro, for its ballpoint pen, and Hoover for its vacuum cleaner. But in the audio field, Tannoy stands alone as a name synonymous with sound, appearing in the dictionary as:
Tannoy (n) 'a communications system with loudspeakers' ...and the phrase 'Over the Tannoy' is universally used to describe a PA announcement.
The company's success in developing public address systems and then continuing its reputation for pioneering audio solutions within the studio environment is legendary.

Despite being steeped in history, the company has never dwelt on its past. Proud of its heritage and the credibility built up with its long association with the professional recording industry, Tannoy has always been an innovator where quality sound reproduction is concerned.

Unique Technologies

Tannoy Dual Concentric™ Drive Unit

Tannoy's core technology, the Dual Concentric™, is unlike ordinary drive units in that it is effectively two drivers properly merged into one. The high-frequency unit is positioned on the back of the low frequency driver so that they are on the same axis. As a result, sound energy is propagated from the same point and delivered through the centre of the low frequency cone providing a true point source. This integrated approach provides a constant time delay over the frequency spectrum offering better transient performance and sound quality with better harmonic alignment than a displaced source monitor design. The crucial benefit at the mix position is the delivery of a more natural and cleaner sound with greatly enhanced intelligibility.

The 'Dual' design provides a very wide sweet spot with an exceptionally even response throughout the listening area and extraordinary transient response. This phase accurate Tannoy-designed drive unit has, for all these reasons, been the choice of professional studio engineers for decades.

WideBand™ Technology

Tannoy has been at the forefront of developing loudspeakers with WideBand™ performance. Extending the high frequency roll-off out to 51kHz corrects the time or phase response at the upper end of audibility, resulting in enhanced accuracy and 'air', improved clarity within the essential mid band area, and even enhancing definition of low frequencies. Tannoy WideBand™ Technology is an essential component of the Precision and Ellipse monitor designs delivering increased tonal accuracy of the individual instruments in the recording process – a mix-critical factor allowing the best EQ and placement decisions to be made.

iDP™ (Interactive Digital Programming) Technology

Accurate room optimisation has taken a quantum leap forward thanks to the development of Tannoy iDP™ technology and its incorporation into Precision iDP and Ellipse iDP models. Utilising iDP™ software, precise matching to the listening environment is possible as each monitor can be individually optimised, taking into account its exact position within the room relative to the room boundary, and its own performance relative to the acoustic properties of the room. iDP™ technology also allows the user to control parameters in 'real time' – such as bass management, global level, recall of different preset settings, solo/mute functions etc.

Tannoy is the longest established loudspeaker company in the world, having been in 'the business' for more than 80 years. It was Tannoy's invention of the Dual Concentric™ speaker in 1948 that brought the company into contact with the top end of professional audio. Arthur Haddy, chief recording engineer at Decca, heard the Monitor Silver version in 1951 and ordered it for the famous Decca FFRR studios in London. EMI subsequently ordered Tannoy Dual Concentric™ loudspeakers for Abbey Road recording studios.

Tannoy User Stories

Randy Kling

The home page of Randy Kling's website (www.discmastering.net) sums up a familiar story of studio professionals worldwide who discovered Tannoy early in their career and have never found a reason to move away. From Elvis Presley to Alice Cooper and through to the present day Randy's engineering talents span over 50 years in the business during which time he has racked up an astonishing 300 gold and platinum records. A constant in his studio equipment list throughout his career - Tannoy monitors. As he says on his website, "Through the passage of time, from tape to vinyl to digital, I've always used the same brand of monitors."

Tony Maserati

When mixing ace Tony Maserati shows up for work, whether in Manhattan mixing Mary J or Beyonce, out in Los Angeles with Ron Fair and the Black Eyed Peas, or in Miami with J Lo, he's comforted by a few certainties. The software on his hard drive, the analogue outboard in his flight case, and his trusted Tannoy monitors, provide a level of consistency from studio to studio that Maserati trusts to help him nail each mix. Ever mindful of advances in speaker design, Maserati recently discovered Tannoy's Ellipse 10 iDPs; a speaker system that's compatible with everything he loves about his Tannoy DMT-12s, which he has worked with for years, yet more portable and effective for detail work.

Carmen Rizzo

Producer and mixer, Carmen Rizzo, is a busy man. In addition to a growing and increasingly eclectic mix of studio projects, he's co-written and played on a wide variety of influential artists' albums and has a burgeoning solo career himself. Recently remixing a Dave Stewart song, featuring Sarah McLaughlin, Annie Lennox, and Imogen Heap, that was written for Greenpeace, he used his new system comprising Tannoy Precision 6 iDP monitors and TS112 iDP sub. "On the first listen I was literally so impressed I couldn't believe it," he said. He further explained that the appeal was multi-faceted; the ability and ease of control when it comes to adjusting speaker parameters, the simple setup – one Ethernet cable between the sub and monitors, the degree of control, and above all, the fact that they represent a lot of speaker in a compact package, and are consistently accurate at any volume.

Consistent Product Development

Landmark speaker models and developments punctuate Tannoy's history – classic loudspeaker models such as the Monitor Red (1958), Monitor Gold (1967), and the Super Red (1980). More recently the long running and highly successful Reveal series has brought Tannoy to a wider audience offering a high performance and competitively priced range of studio monitors.

Significant advances in digital speaker measuring techniques such as Klippel™ symmetry and non-linear distortion analysis, laser scanning interferometry, and acoustic CAD simulation, has allowed further refinement of the Dual Concentric™ drive unit. This, combined with our highly exacting manufacturing processes, ensures that the Precision and Ellipse monitor ranges deliver wide bandwidth, significantly low levels of distortion, very smooth response, extremely accurate phase control and high sensitivity levels.

TANNOY

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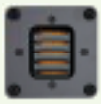
Monitors Manufacturers Directory

ADAM AUDIO



Celebrating its tenth year, Berlin-based Adam Audio produces a wide range of pro audio monitors using their ART (Accelerated Ribbon Technology) tweeter.

From tiny two-way nearfields through mastering monitors and a range of subwoofers, Adam Audio has the range to configure systems for all environments.

www.adam-audio.de

ALESIS

Founded back in 1980 bringing affordable 16-bit processors to the world and taken over by Jack O'Donnell in 2001, Alesis is now headquartered in Cumberland, Rhode Island. It manufactures nearfield active and passive two-way monitors for project studios.

www.alesis.com

AMBIANCE ACOUSTICS

Based in San Diego California since 1994, Ambiance Acoustic produces a range of uniquely designed multi-speaker cube monitors for stereo and multi-channel applications.

www.calcube.com

ATC

Billy Woodman formed British loudspeaker company ATC in 1974 with the brief to create the best monitor speakers through technological advance. ATC has a number of monitors for both studio and sound reinforcement use.

www.atc.gb.net

AUDIX

Formed in Redwood City California in 1984, Audix moved to their current location in Oregon in 1991 where they manufacture their small active PH3-S and PH5-VS monitors.

www.audixusa.com

B&W

John Bowers and Peter Wilkins developed a business producing some of the most visually distinctive monitors ever seen. This continues today with products like the FPM flat panel monitor and the Nautilus.

www.bowers-wilkins.co.uk

BAG END LOUDSPEAKERS

Located in Lake Barrington Illinois, Bag End Loudspeakers manufactures a number of speakers for a wide variety of environments. Cinema, small and large-scale sound reinforcement, studio and instrument cabinet speaker systems are all catered for here.

www.bagend.com

BEHRINGER

With one of the biggest ranges of audio equipment around, it's not surprising Behringer's portfolio includes a wide range of monitors, including the Truth range, with both ribbon and conventional tweeter designs.

www.behringer.com

BLUE SKY

Blue Sky International is a collaboration between Group One Ltd and Audio Design Labs Inc formed in 2001. Blue Sky has a number of monitoring systems for both stereo and multi-channel work, including its THX-certified System One series.

www.abluesky.com

DIGIDESIGN

Digidesign has more than 20 years of experience in the world of digital audio workstations, and after Avid Technology acquired it in 1995, has expanded and diversified. Digidesign has the RM1 and RM2 active monitors in its portfolio.

www.digidesign.com

DYNAUDIO ACOUSTICS

Dynaudio celebrated its 30th anniversary last year. Dynaudio has come a long way from the P-series in 1977 made from OEM drivers and Dynaudio crossovers. The range now includes such stars as the BM range, and the networkable and DSP enabled Air series.

www.dynaudio.com

EARTHWORKS

David Blackmer's (founder of dbx) New Hampshire based Earthworks has a reputation for high-end pro audio equipment and this is evident in its Sigma range of compact monitors.

www.earthworksaudio.com

EDIROL

Edirol is Rolands' audio arm that deals with computer based products. Edirol has developed a line of USB and Firewire interfaces and also has a range of active micro speakers for close computer monitoring, and a USB micro monitor system.

www.edirol.com

EMES

German company Emes manufacture a wide variety of active two-way monitors and subwoofers for stereo and surround applications in broadcast, post and project studio environments.

www.emes.de

ESI

ESI is based in Korea and designs and manufactures an array of computer based audio products that include two-way active monitors and active subwoofer to allow for a number of monitor configurations.

www.esi-pro.com

EVENT ELECTRONICS

Event has been producing award winning precision monitors since 1994 and currently has a number of active two-way monitors. The company has recently introduced the OPAL two-way monitoring system to its portfolio.

www.event1.com

EXCEL AUDIO SYSTEMS

Excel manufactures the excellent 101A, 202A, and 301A active monitors, plus the 802FEU (Frequency Extension Unit) sub. All of the units main units are two-way active, ported models with minimum phase active crossovers, and magnetic shielding.

www.excelaudio.co.uk

EXIGY

Formed in October 2003, and now partnered with Audient and LA Audio, Exigy specialises in monitoring solutions and installations in post, music, and home cinema, with custom work on projects where necessary. Satisfied clients include Grand Central Studios, Realworld Post, and more.

www.exigy.co.uk

FAR

ATD2 specialises in electro acoustic technologies and the design of digital active monitors under the brand name FAR. There is an extensive collection of both digital and analogue active two-way monitors and both analogue and digital subwoofers.

www.atd2.com

FOCAL

French speaker manufacturer Focal has some of the most distinctive looking monitors on the market today. Its range includes a number of two and three-way active designs both analogue and digital, with matching active subwoofers for multiple configuration options.

www.focalprofessional.com

FOSTEX

Fostex has been involved in the development of pro audio products since 1973 bringing a number of firsts to the industry. The Fostex monitor range accommodates those working in field recording, studio, broadcast, and project environments, with a range of micro and two-way active designs with active subwoofer option.

www.fostex.com

monitors 2009

GENELEC
Genelec was founded in Finland in 1978, and monitor design and manufacture has been the core of its business ever since. Genelec is responsible for a number of key technology developments in monitoring that are in use today.

The Genelec active monitor range includes examples of almost every configuration, and Genelec also undertakes custom installations.

www.genelec.com

GRIFFIN AUDIO
Based in New York, Griffin Audio is focused on uncompromising monitor design. The Griffin range includes active two and three-way monitors, active subwoofers, in wall mounted and specialised active mastering speakers.

www.griffinaudiousa.com

HARBETH
Based in the village of Lindfield, West Sussex, Harbeth manufactures both domestic and professional monitors. The professional range of active monitors have found homes in many places, but it is the BBC who have mainly taken to Harbeth, as its designs are a direct drop-in replacement for the LS3 and LS5 monitor speakers.

www.harbeth.com

HOT HOUSE
Hot House Professional Audio is a small high-tech R&D driven company geared towards the development of standard-setting studio monitoring products. Hot House has introduced well over a dozen new amplifiers, studio monitors, and active subwoofers over the last few years. The range includes passive two-way and a variety of active mid and farfield monitors.

www.hothousepro.com

JBL
James Bullough Lansing established his company in Los Angeles back in 1927 and was involved in the development of motion picture sound systems from the very beginning. From this, JBL has grown to supply monitor speaker systems for every area of the pro audio industry, including the LSR range with RMC (Room Correction) integration.

www.jblpro.com

KLEIN + HUMMEL

Established in Germany in 1945, Klein + Hummel studio monitors have been setting global standards in professional sound reproduction for decades. Conceived as acoustically uncompromising tools for the evaluation and fine-tuning of sound material, their range runs from small active two-way through analogue and digital three-way active monitors and active subwoofers.

www.klein-hummel.com

KRK

Film sound engineer Keith Klawitter, and his need for a monitor of uncompromising accuracy and clarity, founded KRK in 1986. KRK now manufactures a range of active two-way monitors with active subwoofer options, and its four-way ultimate mains system.

www.krksys.com

LEGACY AUDIO
From humble beginnings in a garage in the mid-west USA, Bill Dudleston and Jacob Albright have sought to bring monitors of stunning craftsmanship for multiple applications to the world of pro audio, and have successfully done this for over two decades. Legacy has passive designs for all components of a surround system, and main speakers from the two-way Studio to the five-way Helix.

www.legacy-audio.com

LIPINSKI SOUND
Educated in Europe, and now based in the US, Andrew Lipinski founded Lipinski Sound in October 2003. As the only audiophile oriented manufacturer professionally active in both recording arts and engineering sciences, Lipinski Sound aims to advance the art of music recording and playback to the next level of reference. The range of passive units can be configured for stereo and surround applications.

www.lipinskisound.com

MACKIE
Amongst Mackie's range of extensive and, in some cases, ground breaking pro audio equipment was the HR monitor. This set a standard for affordable active studio monitoring which continues today with Mackie's range of active monitors designed for studio and post applications in stereo and surround.

www.mackie.com

M-AUDIO
M-Audio is part of Avid Technology Inc., and is focused principally on computer based studio systems. M-Audio has a range of speakers from micro desktop monitors to high spec active studio monitors for stereo and surround applications.

www.m-audio.com

ME-GEITHAIN
German-based ME-Geithain manufactures the RL series of reference-class studio monitors with a design philosophy that encompasses one aim – to build speakers without colouration regardless of genre. The company takes responsibility for the whole production process, from the construction of the amplifier through to the voice coil.

www.me-geithain.de

MEYER SOUND
Meyer Sound was established in 1979 to create products for sound reinforcement and recording. Today, the company shows a track record of more than 27 years of innovation, quality, performance, and support. Meyer Sound has speakers for every kind of sound reinforcement and industrial application, as well as near and farfield monitoring solutions for studio use.

www.meyersound.com

MISSION
Founded in 1977, and producing the world's first polypropylene drive unit in the Mission 770 in 1978, Mission has pushed, and continues to push, forward and develop its extensive range of monitors for stereo and surround applications.

www.mission.co.uk

MK SOUND
MK Sound was founded in 1974 by Ken Kreisel, Dr. Lester Field, and D. Jonas Miller and has over three decades worth of experience in designing and manufacturing subwoofers and other high-end loudspeakers. The company is best known for pioneering design concepts in powered subwoofers and satellite speakers, which have been used worldwide for surround sound monitoring applications.

www.mksoundsystem.com

MUNRO ACOUSTICS
Munro has been designing and building sound facilities for over 25 years. It has maintained its profile by adapting to the changing needs of these facilities. Munro designs and manufactures custom monitor installations for music, post, cinema, and mastering facilities.

www.munro.co.uk

NADY SYSTEMS
Established in 1976 by John Nady, Nady Systems has since diversified into other areas of the industry and now manufactures a range of monitors from small two-way nearfields to large sound reinforcement systems.

www.nady.com

Monitors Manufacturers Directory

NHTPRO
Founded in 1987, California based NHTPro has produced a number of award winning monitors for many applications. The range is made up of a number of small active systems for small desktop through to full surround setups.
www.nhthifi.com

PMC

UK-Based PMC was founded in 1990 by Peter Thomas and Adrian Loader. PMC produces precision and speaker systems featuring its unique Advanced Transmission Line design across the range.
PMC manufactures both active and passive monitors for use in music studios through to full film surround mixing environments.
www.pmc-speakers.com

PSI AUDIO

In 1975 while still studying at the EPFL in Lausanne, Alain Roux produced the first of his monitors under the PSI brand name. PSI Audio now produces active monitors in both stereo and surround configurations.
www.psi-audio.com

QUESTED
Roger Quested began his career in 1968 and is the man behind Quested Monitoring System's legendary soft-dome designs. Quested now produces a number of small nearfield passive and active monitors for use in all types of studio environment.
www.quested.com

SAMSON AUDIO
Samson has been designing pro audio equipment for the last 26 years, initially wireless microphone technology, but now equipment across the pro audio world. Samson has a range of passive and active monitors from small computer audio monitors to full live PA systems.
www.samsontech.com

SLS LOUDSPEAKERS
Since the early 1970's, US based SLS Loudspeakers has been designing and manufacturing loudspeaker systems for both studio and sound reinforcement applications. Specializing in its Ribbon Driver Technology, SLS now has a vast array of monitors for critical studio, live, cinematic and commercial use.
www.slsloudspeakers.com

SONODYNE
India-based Sonodyne was conceived in the late 1960s and was the brainchild of Ashoke Mukherjee, an engineer student from Roorkee University. Sonodyne Electronics Co. Pvt. Ltd. first produced battery eliminators, then hi-fi amps and speakers in the 70s. The company now produces an impressive range of speakers for live and studio use.
www.sonodyne.com

SOUND PROJECTS
Founded originally as Master Blaster in 1983 specializing in modular sound reinforcement systems, this Dutch company has slowly been re-branding its products as Sound Projects. The company now deals with small studio monitoring as well as continuing with sound reinforcement loudspeakers.
www.soundprojects.com

SURROUNDTEC
German company SurroundTec designs and manufactures a range of monitors that can be either active or passive, and can be combined to create any stereo or surround configuration required.
www.surroundtec.de

TANNOY

Tannoy has been designing, developing and manufacturing some of the most familiar monitors in use in studios worldwide. Known for its development of Waveguide and Dual Concentric Driver technology, Tannoy now manufactures monitors for studio, live and commercial installations.
www.tannoy-speakers.com

TAPCO
Tapco produces a range of small active two-way nearfield monitors, and both passive and active small PA speakers for multiple configurations.
www.tapcoworld.com

TASCAM
Tascam makes a vast range of gear for the audio professional, including a series of studio monitors. The VL-A Series are two-way, 'value-priced' models with a complementary sub, and the top of the range VL-X series, and the VL-S series (incorporating NXT driver technology) complete the range.
www.tascam.com

TRUTH AUDIO
US based Truth Audio currently produces a dual woofer two-way nearfield monitor that can be specified in either a passive or active configuration. There are plans to produce a larger mid-field monitor.
www.truthaudio.com

UNITY AUDIO

Since 1995 Unity Audio has been distributing professional monitor brands and has recently unveiled its very first foray into the speaker design and manufacture market. The Rock is the first in the series with amp design by Esoteric Audio Research designer Tim De Paravicini.
www.unityaudio.com

WESTLAKE AUDIO
Westlake Audio designs and builds loudspeakers that are as accurate to the source recording as currently possible, and researches methods of improving this technology for future generations of loudspeakers. Westlake Audio produces a range of monitors from small nearfield to large farfield, and wall mount speakers.
www.westlakeaudio.com

WHARFEDALE PRO
Since 1932, Wharfedale has been at the forefront of loudspeaker technology – this impressive heritage in the design and manufacture of audio systems has led to the creation of Wharfedale Pro and a range of active and passive monitors for a wide spectrum of stereo and multi-channel applications.
www.wharfedalepro.com

YAMAHA
Yamaha are of course responsible for the most popular nearfield monitor in pro studios, the NS10. Yamaha has continued to develop its monitor range and now has a wide range of active and passive speakers for all types of studio environment.
www.yamaha.com

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... and Another

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The Dynaudio Acoustics BM 5A set a new benchmark for what an active nearfield studio monitor could be. The new BM 6A mk II and BM 12A take advantage of that same design philosophy while offering more power, more headroom and wider frequency response.

As one of the few manufacturers that build our own drivers, we believe in a no compromise approach to designing studio monitors, whatever the application. The new BM 6A mk II and BM 12A are no exception to that rule.

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For details contact your dealer today or visit www.dynaudioacoustics.com

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